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A revision of the species of the subfamily Habrocerinae (Coleoptera: Staphylinidae) of the world.

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A revision of the species of the subfamily Habrocerinae (Coleoptera: Staphylinidae) of the world. – At present the subfamily Habrocerinae comprises two genera, *Habrocerus* Erichson and *Nomimocerus* Coiffait & Saiz. A worldwide revision of the genus *Habrocerus* Erichson yielded altogether 13 valid species. 7 new species are described: *H. ibericus* sp. n. from Southwest Europe, *H. simulans* sp. n. from the Eastern Mediterranean region, *H. cyprensis* sp. n. from Cyprus, *H. canariensis* sp. n. from the Canary Islands, *H. indicus* sp. n. from India, *H. costaricensis* sp. n. from Costa Rica and *H. schillhammeri* sp. n. from Sumatra. *H. capillaricornis* ssp. *pisidicus* Korge is raised to species rank. Lectotypes are designated for *Habrocerus capillaricornis* (Gravenhorst) and *H. schwarzi* Horn. *Nomimocerus tichomirovae* Filatova is transferred to *Habrocerus*. *H. magnus* Leconte from North America is excluded from the genus. 3 new species of *Nomimocerus* Coiffait & Saiz, formerly known to contain only the type species, *N. marginicollis* (Solier), are described: *N. longispinosus* sp. n., *N. peckorum* sp. n., both from Chile, and *N. parvispinosus* sp. n. from Argentina and Chile. The systematic position and the morphological characteristics, particularly the structure of the male abdomen, of *Habrocerus* and *Nomimocerus* are outlined. For each species details and illustrations of differential characters as well as data on distribution and, if available, bionomics are presented. Diagnostic keys allowing separation of *Habrocerus* and *Nomimocerus* adults are provided.

Key-words: Coleoptera - Staphylinidae - Habrocerinae - *Habrocerus* - *Nomimocerus* - World - Taxonomy - new species

THE SUBFAMILY HABROCERINAE: INTRODUCTION AND SYSTEMATICS

The genus *Habrocerus* was fixed by Erichson (1839) by monotypy. Its type species, *H. capillaricornis*, had been described as *Tachyporus capillaricornis* by Gravenhorst in 1806. In the 19th century, *Habrocerus* was largely considered to belong to the subfamily Tachyporinae, apparently because of its general similarity in

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body shape with some tachyporine genera, until GANGLBAUER (1895) established the subfamily Habrocerinae. BERNHAUER & SCHUBERT (1916) placed four genera in the Habrocerinae: *Amblyopinus* Solsky, *Edrabius* Fauvel, *Eumitocerus* Casey and *Habrocerus* Erichson, which at that time contained four species. *Amblyopinus* and *Edrabius* were later excluded from the subfamily and placed in the Amblyopininae (SEEVERS 1944). *Eumitocerus* proved to be a synonym of *Trichophya* Mannerheim (BLACKWELDER 1952; MOORE & LEGNER 1975). Consequently, *Habrocerus* was the only genus left in the Habrocerinae until COIFFAIT & SAIZ (1965) established the genus *Nomimocerus*, whose type species had been described by SOLIER (1849) as *Tachyporus marginicollis* and treated by subsequent authors as *Habrocerus marginicollis* (Solier).

Together with some other subfamilies COIFFAIT (1972) excluded the Habrocerinae from the Staphylinidae and elevated the subfamily to family rank, the Habroceridae containing two genera, *Habrocerus* and *Nomimocerus*. However, hardly any of the 20th century authors working on the higher classification of Staphylinoidea have shared his view concerning the Habrocerinae; they maintained (and so do we) the status of subfamily, although they may have disagreed considerably with regard to other aspects of the general systematics of Staphylinidae (see LAWRENCE & NEWTON 1982; NAOMI 1985). It should be added that CROWSON (1967), in contrast, places the Habrocerini (containing *Habrocerus* and *Olisthaerus* Dejean [!]) in the Tachyporinae, together with Trichophyini, Tachyporini, Bolitobiini and Hypocyptini. According to a recent study by ASHE & NEWTON (1993) the Habrocerinae are the sister group to the Trichophyinae.

The Habrocerinae differ from other Staphylinidae (a) in that the hind coxae form triangular plates (Fig. 1f), (b) in that only five abdominal segments are visible in the males, (c) in that the sclerotization of the lobes and the bulbus of the aedeagus is reduced and (d) especially in the remarkably modified urites VIII and IX in the males (COIFFAIT 1972; COIFFAIT & SAIZ 1965; CROWSON 1967). Since all of these characters can be considered apomorphic, there remains little doubt that the Habrocerinae represent a monophyletic taxon.

As can be concluded from zoogeographic evidence the Habrocerinae appear to be rather old phylogenetically: (1) The subfamily is widely distributed in both the northern and the southern hemisphere, including the Palaearctic, the Oriental, the Nearctic and the Neotropical region. (2) The range of the *Habrocerus schwarzi* group shows a disjunct pattern with species occurring in the New World as well as the East Palaearctic and the Indo-Malayan subregion. (3) The subfamily contains species with an apparently relict distribution. (4) The genus *Nomimocerus* is restricted to the temperate zones of South America.

ACKNOWLEDGEMENTS

We are much indebted to our friend, Dr. Lothar Zerche, DEI Eberswalde, for his critical comments on the manuscript and advice, not to mention his occasional figurative nudges encouraging us to put our revision on a worldwide basis. We would also like to express our thanks to the following persons and institutions for making material available to us for our study:

Ckat	Private collection, Mr G. Katschak, Kleve
Ckor	Private collection, Dr. H. Korge, Berlin
Csch	Private collection, Mr M. Schülke, Berlin
Czan	Private collection, Dr. A. Zanetti, Verona
BMNH	British Museum of Natural History (Dr. P.M. Hammond)
BRI	Biosystematics Research Institute, Ottawa (Dr. J.M. Campbell, Dr. A. Smetana)
DEI	Deutsches Entomologisches Institut, Eberswalde (Dr. L. Zerche)
FMNH	Field Museum of Natural History, Chicago (Dr. A.F. Newton)
IRSNB	Institut Royal des Sciences Naturelles de Belgique (Mr I. Brogniez, Dr. K. Desender)
MCNT	Museo de Ciencias Naturales de Tenerife (Dr. J.J. Hernández)
MCSNV	Museo Civico di Storia Naturale di Verona (Mr R. Pace)
MCZ	Museum of Comparative Zoology, Cambridge Mass. (Mr S.P. Cover)
MHB	Museum für Naturkunde der Humboldt-Universität, Berlin (Dr. M. Uhlig)
MHNG	Muséum d'Histoire naturelle, Genève (Dr. I. Löbl)
MNS	Museum für Naturkunde, Stuttgart (Dr. W. Schawaller)
NHMW	Naturhistorisches Museum Wien, Vienna (Mr H. Schillhammer)
ZIAWP	Zoological Institute of the Academy of Sciences St. Petersburg (Dr. G.S. Medvedev)

The authors' collections will be abbreviated as follows: Cass (coll. Assing) and Cwun (coll. Wunderle).

The genus **Habrocerus** Erichson, 1839

Within the Habrocerinae the genus *Habrocerus* is characterized by the shape of the antennae, the mouthparts and structure of the male genital segments (see below).

The last to describe a species of *Habrocerus* was Pace (1987) according to whom the genus then included four species: *H. magnus* Leconte and *H. schwarzi* Horn from North America, *H. capillaricornis* (Gravenhorst) from Europe (also introduced in North and South America) and the new species *H. rougemonti* Pace from Thailand. A fifth species, *H. tropicus*, had been described by Wendeler (1956) from Brazil. Korge (1971) described a subspecies (*pisidicus*) of *H. capillaricornis* from Turkey. It might be worth mentioning that it was specimens of this subspecies, collected by the present authors in Turkey, which somehow raised our interest in the genus and mysteriously led to a worldwide revision.

Morphology

Within the Staphylinidae *Habrocerus* is readily recognized by its *Tachyporus*-like body shape (and size), the more or less shining and non-pubescent surface of head, pronotum and elytra and a combination of various further traits (for further details see Blackwelder 1936; Coiffait 1972; Lohse 1964). It differs from the only

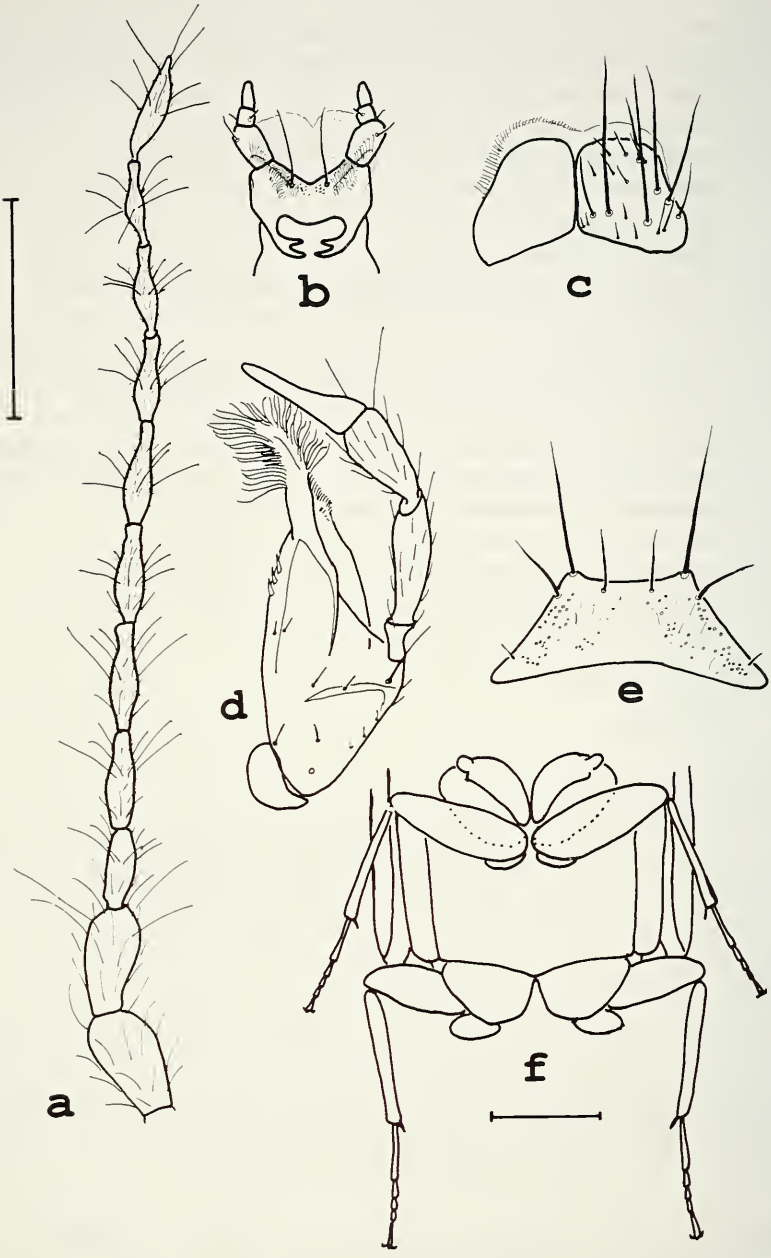

FIG. 1a-f

Habrocerus pisidicus Korge: antenna (a); labium (b); labrum (c); maxillary palpus (d); mentum (e); metathorax in ventral view (f). Scale: 0.5 mm.

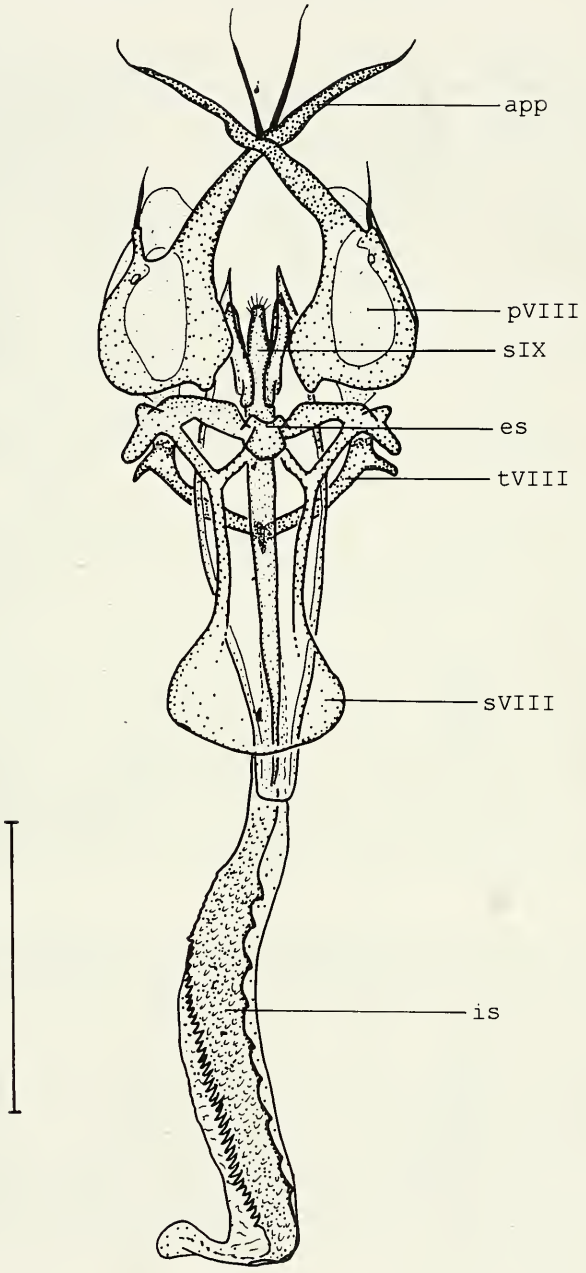

FIG. 2

Habrocerus pisidicus Korge: morphology of the ♂ urites VIII and IX in ventral view (app = appendices of pleurite VIII; es = emargination of central hind margin of sternite VIII; is = internal sac; pVIII = pleurite VIII; sVIII = sternite VIII; sIX = sclerites of urites IX; tVIII = tergite VIII. Scale: 0.5 mm.

further habrocerine genus *Nomimocerus* Coiffait & Saiz in that the antennomeres 3-11 are filiform in *Habrocerus* (Fig. 1a), whereas they are of normal shape and about the same width as segments 1-2 in *Nomimocerus* (Fig. 19a). Furthermore, the labial palpi are 3-segmented in the former and 4-segmented in the latter (COIFFAIT & SAIZ 1965) (Figs 1b, 19b). As in *Nomimocerus*, the maxillary palpi are 4-segmented (Fig. 1d). In contrast to most other Staphylinidae *Habrocerus* does not possess a ligula (Fig. 1b).

The most remarkable feature of *Habrocerus* is the structure of the abdominal segments VIII and IX, which are highly modified in the males. In Staphylinidae the first two abdominal segments are generally more or less merged with the metanotum, segments III-VIII with their corresponding tergites are usually visible, the sclerites of segments IX and X are modified and subject to various degrees of reduction and, finally, the males possess an aedeagus. In *Habrocerus* males, however, while segments I-VII are pretty much in accordance with the usual staphylinid condition, segment VIII forms part of the genital armature and is normally completely retracted in the abdomen (except for the apices of two spine-like appendices of pleurites VIII) (Fig. 2). According to COIFFAIT (1972) and MUIR (1919) the dorsal sclerite, shaped like a wide open V, is homologous to tergite VIII and is connected laterally to two pleural plates (pleurites VIII) each with a spiracle and with a long spine-like process, hereafter referred to as 'appendix'. Ventrally the pleurites are connected with sternite VIII, a large plate which is more or less widened anteriorly and which has an emargination posteriorly. (Both the appendices and the form of anterior and posterior part of sternite VIII offer easily visible characters for identification.) Segment IX, too, is highly modified. It is "shaped like an oat" (MUIR 1919) and consists of two slightly curved lobes dorsally connected in a V-shaped piece; ventrally a small trident body is visible, which is attached to a rod-like structure (Fig. 2, 9i, 10i). In the *Habrocerus schwarzi* species group (see below) the sclerites of urite IX are arranged asymmetrically.

As opposed to other Staphylinidae, *Habrocerus* males do not have an aedeagus, but "in the place of the median lobe we find a membranous tube opening in the dorsal aspect of the small trilobe process, on the same membrane as the anus is situated" (MUIR 1919). The internal sac is comparatively large and covered with minute spines. In addition, it may contain one or more rows of relatively large dark spines, the size and number of which vary between species and, therefore, represent very useful differential characters for identification (Figs 11, 18). For a more detailed description of the general structure of the male abdomen in *Habrocerus* see BLACKWELDER (1936), COIFFAIT (1965; 1972) and particularly MUIR (1919). It should be noted that BLACKWELDER (1936) erroneously bases his comments (pp. 80-81) on *Habrocerus schwarzi* Horn; his illustration (p. 82) clearly refers to *H. capillaricornis* (Grav.) and not to *H. schwarzi*.

The structure of the female abdomen in principle resembles the typical staphylinid condition with the pygidium and the stylus-shaped processes of urite IX visible in normal position (Fig. 4g-i). The posterior margins of tergite and sternite VIII are of diagnostic value in some species.

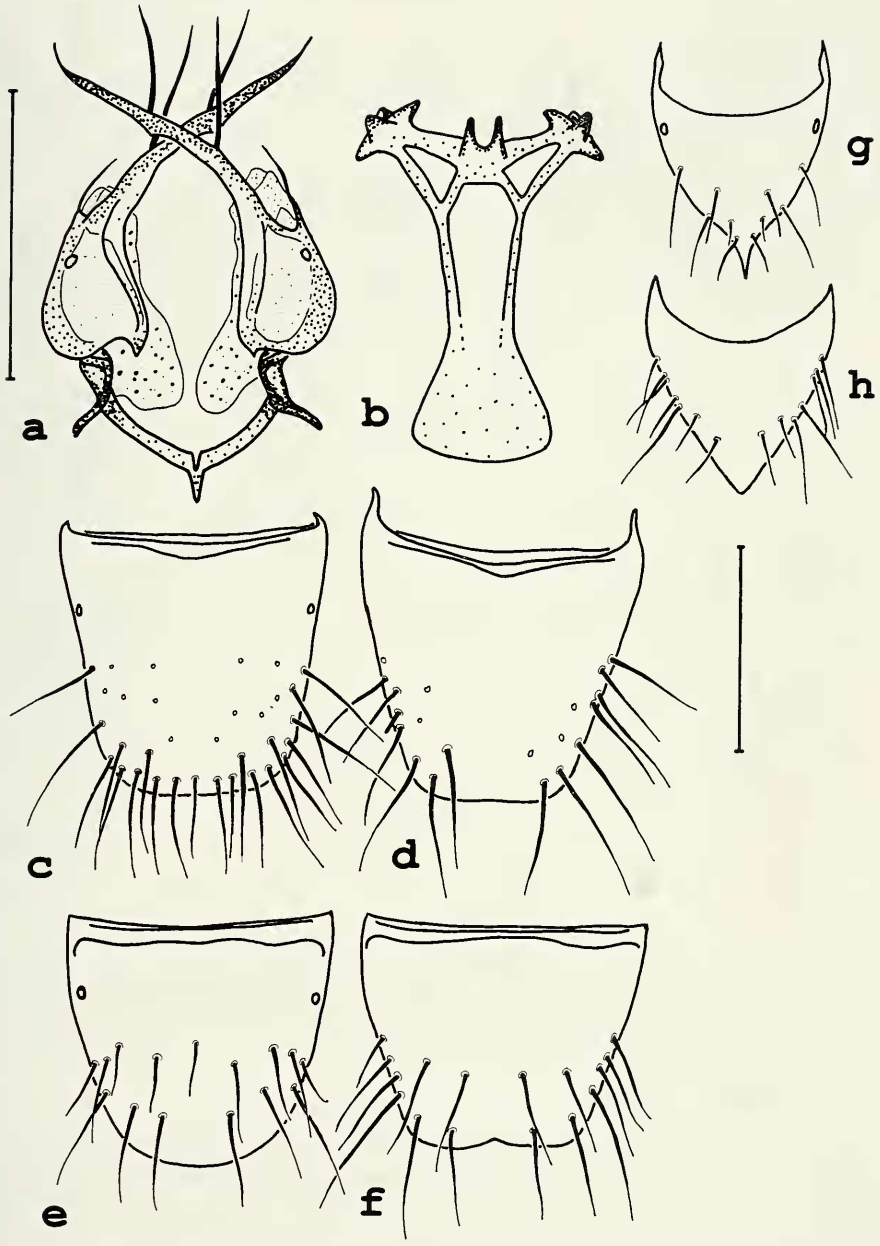

FIG. 3

Habrocerus capillaricornis (Gravenhorst): pleurites and tergite of ♂ urite VIII (a); ♂ sternite VIII (b); ♂ tergite VII (c); ♂ sternite VII (d); ♀ tergite VII (e); ♀ sternite VII (f); ♀ tergite VIII (g); ♀ sternite VIII (h). Scale: 0.5 mm.

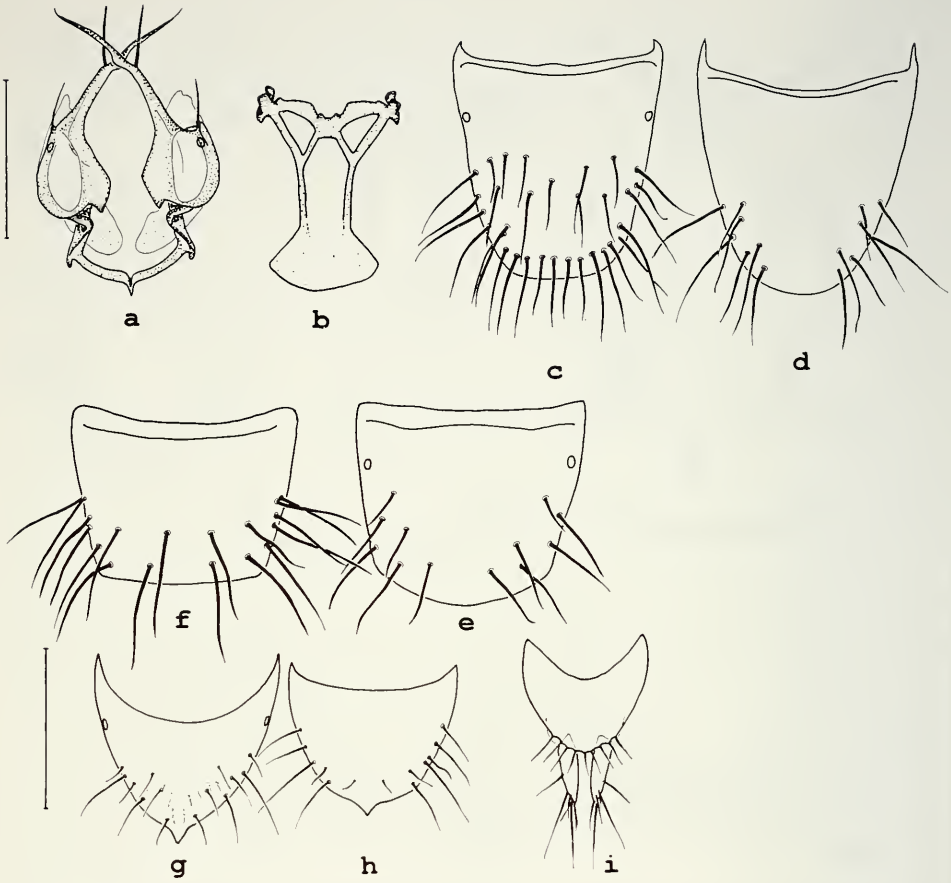

FIG. 4

Habrocerus pisidicus Korge: pleurites and tergite of ♂ urite VIII (a); ♂ sternite VIII (b); ♂ tergite VII (c); ♂ sternite VII (d); ♀ tergite VII (e); ♀ sternite VII (f); ♀ tergite VIII (g); ♀ sternite VIII (h); ♀ urite IX (i). Scale 0.5 mm.

THE SPECIES OF **Habrocerus**

The revision of several thousands of specimens of *Habrocerus* from our own material as well as from various private and museum collections yielded altogether 7 species new to science; 1 subspecies is raised to species rank. On the other hand it revealed that one of the four species known before our study must be excluded from the genus, so that *Habrocerus* currently comprises 13 valid species, seven of them Palaearctic, 3 Oriental, 1 Nearctic and 2 Neotropical. It may be assumed that a more intensive search especially in the Neotropical region and in Southeast Asia, perhaps also in other areas of the southern hemisphere (Australia, Africa) will lead to an increase in species number, since each of the 5 Neotropical and Oriental species is

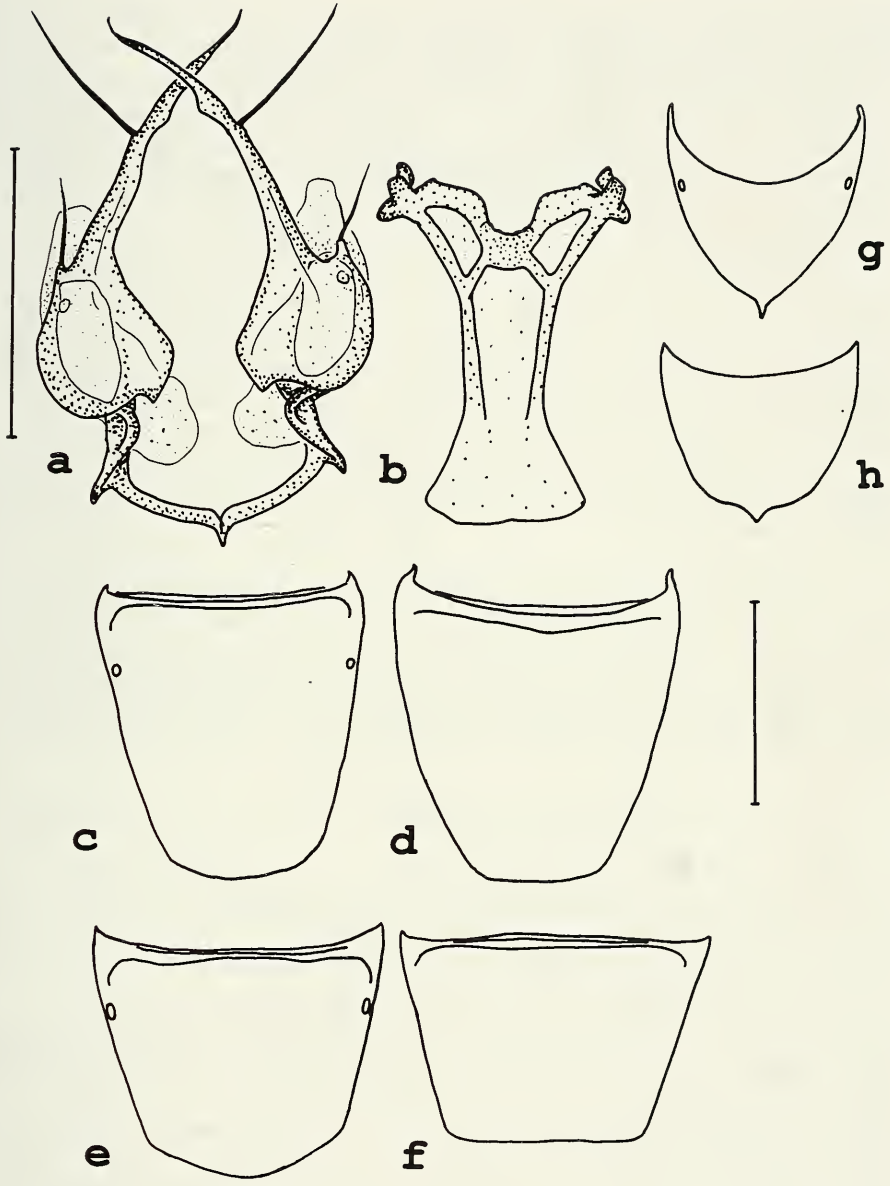

FIG. 5

Habrocerus simulans spec. nov.: ♂ pleurites and tegite of ♂ urite VIII (a); ♂ sternite VIII (b); ♂ tergite VII (c); ♂ sternite VII (d); ♀ tergite VII (e); ♀ sternite VII (f); ♀ tergite VIII (g); ♀ sternite VIII (h); setae and punctures omitted in c-h. Scale: 0.5 mm.

known only from one country or even one province. Hopefully, our study may also help to find *Habrocerus* material not yet revised from regions not yet covered.

Based on several characters, especially the morphology of the last segments of the abdomen in both males and females (see key), the genus *Habrocerus* can clearly be divided into three groups of species, hereafter referred to as the *Habrocerus capillaricornis* species group (with the exception of the presently wide-spread *H. capillaricornis* West Palaearctic), the *H. rougemonti* species group (Oriental) and the *H. schwarzi* species group (New World, East Palaearctic, Sumatra).

Since the species of *Habrocerus* within the species groups mentioned above, in some cases even between the groups, are usually highly similar in their external morphology, we consider it sufficient to give a detailed description of *H. capillaricornis* and relevant characters of typical representatives of the other groups. The descriptions of the remaining species will then focus on differential features. Therefore, the morphology of the internal sac and the posterior urites, particularly of the males, in some cases the only reliable characters for identification, is given special attention. For better evaluation of the number, sizes and shapes of the spines in the internal sac, the latter should be squeezed lightly and examined in transparent light under the microscope.

Chaetotaxy, an important means of identification in Tachyporinae (Campbell 1979), may help to distinguish the species groups mentioned above, but has otherwise proved to be not very useful for separation of species within the groups. Not only are constant differences absent, many setae also tend to be missing in mounted material. Similarly, this applies to the antennae. Other characters are subject to various degrees of intraspecific variability, e.g. colour and microsculpture.

I. The *Habrocerus capillaricornis* species group

Habrocerus capillaricornis (Gravenhorst, 1806) Figs 3, 11, 12

Tachyporus capillaricornis Gravenhorst, 1806, *Mon. Col. Micr.*: 10f.
Tachyporus nodicornis Stephens, 1832, Ill. *Brit. Ent.* 5: 186f.
Habrocerus capillaricornis (Grav.), *Erichson*, 1839, *Käf. Mark Brandenb.* I: 401f.

Lectotype: ♂, here designated, labels: Syn-Typus, Zool. Mus. Berlin, Lectotypus, *Habrocerus capillaricornis* (Grav.), desig. Assing/Wunderle 1992 (MHB).

Paralectotypes: 1 ♂, 1 ♀, here designated, labels as in lectotype; 1 ♀, here designated, labels: 5704, Syn-Typus, *capillaricornis*, Zool. Mus. Berlin (MHB).

Further material studied:
A total of 2049 specimens from the following collections was studied: Csch, BMNH, BRI, DEI, FMNH, MHB, MHNG, MNS, Czan, Cass, Cwun.

Europe: Germany (830), Austria (13), Switzerland (13), Poland (1), France (Continental: 45, Corse: 3), Spain (Continental: 92, Canary Islands: Tenerife: 11, La Palma: 137, Gomera: 5), Portugal (Continental: 16, Madeira: 8), Italy (Continental: 65; Sardinia: 1, Sicily: 6), CSFR (6), Hungary (5), Yugoslavia (33), Romania (8), Bulgaria (6), Greece (Continental: 14, Corfu: 8, Levkas: 10, Euboea: 1, Peloponnes: 5), Russia (1), Ukraine (2).

Asia: Turkey (15), Transcaucasia (?) (1).

North Africa: Algeria (62), Maroc (2).

North America: U.S.A. (519), Canada (93), South America: Colombia (2).

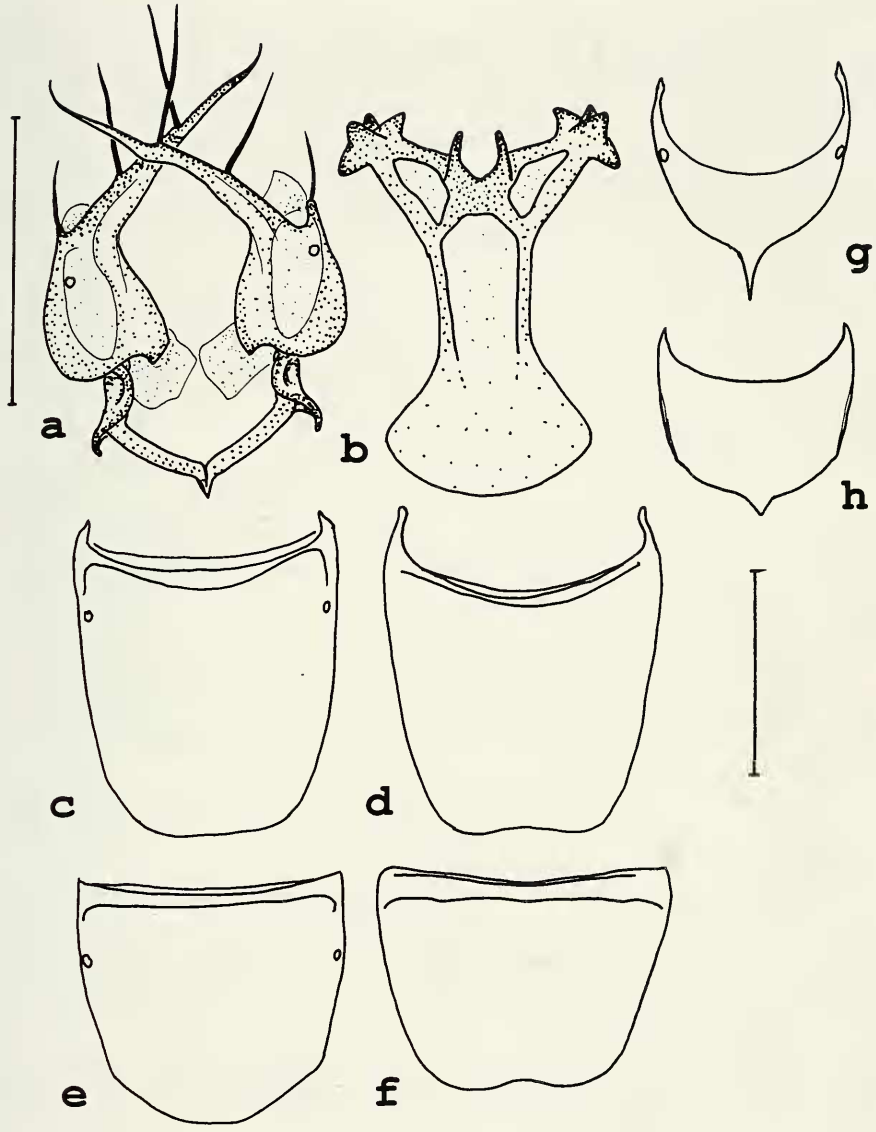

FIG. 6

Habrocerus cyprensis spec. nov.: ♂ pleurites and tergite of ♂ urite VIII (a); ♂ sternite VIII (b); ♂ tergite VII (c); ♂ sternite VII (d); ♀ tergite VII (e); ♀ sternite VII (f); ♀ tergite VIII (g); ♀ sternite VIII (h); setae and punctures omitted in c-h. Scale: 0.5 mm.

Description:

3.0-4.0 mm. Colour variable; head, pronotum and elytra light to pitchy brown, abdomen usually slightly darker except for the hind margins of the tergites; legs, antennae and mouthparts yellowish brown to light brown, maxillary palpi darkened.

Head with large eyes, in normal position reaching anterior margin of pronotum; surface shining, shallow transverse microsculpture only visible at higher magnifications (80x). Antennal segments 3-11 filiform, distinctly narrower than first two segments; segments 4-11 with short pubescence, a bottle-like dilatation and a circle of long setae in the middle (cf. Fig. 1a).

Pronotum ca. 1.5x wider than long, with arcuate sides converging more strongly anteriorly than posteriorly and with rounded angles; front and hind margin with 4, lateral margins with 2 long setae; epipleurae not visible in lateral view; disc of pronotum usually smooth and shining, superficial transverse microsculpture, if any, restricted to marginal areas of pronotal surface.

Elytra transverse, ca. 1.5x wider than long, at base about as wide as and at suture as long as pronotum; lateral margins slightly diverging posteriorly, hind angles truncate; elytra with 1 subhumeral seta, 2 setae near lateral margin and 1 seta at sutural angle; surface with often very weak micropunctuation and fine transverse microsculpture, its intervals clearly wider than those on the pronotum; epipleurae meeting with dorsal surface at acute angle.

Legs moderately long; apices of middle and hind femora with a long seta; tarsi 5-segmented; basal segment of middle and hind tarsi elongate, as long as the two following segments together, segments 2-4 decreasing in length, segment 5 as long as the two preceding ones together.

Abdomen with distinct lateral margins converging posteriorly, tergites with barely visible microsculpture and dense yellowish pubescence, their hind margins with long setae increasing in number caudadly.

♂: appendices of pleurites VIII with 2 long setae (Fig. 3a), emargination of sternite VIII U-shaped and with relatively long posterior processes (Fig. 3b), hind margins of tergite and sternite VII straight with rounded angles (Figs 3c-d); internal sac with 6 large, wide-based spines and additional small sclerotized structures of roughly triangular shape (Fig. 11a).

♀: hind margin of tergite VII rounded, that of the corresponding sternite with shallow central emargination; tergite VIII acutely pointed (Fig. 3g), sternite VIII V-shaped (Fig. 3h) posteriorly.

Distribution:

H. capillaricornis is widely distributed in the Western Palaearctic region. It is a common species in Central Europe and has also been recorded from the southern parts of the Scandinavian countries, from the British Isles (except Scotland), from southern Europe and the Mediterranean (including North Africa), eastern Europe and the Caucasus (Fig. 12). We have not seen any specimens from Cyprus, Rhodos and Crete.

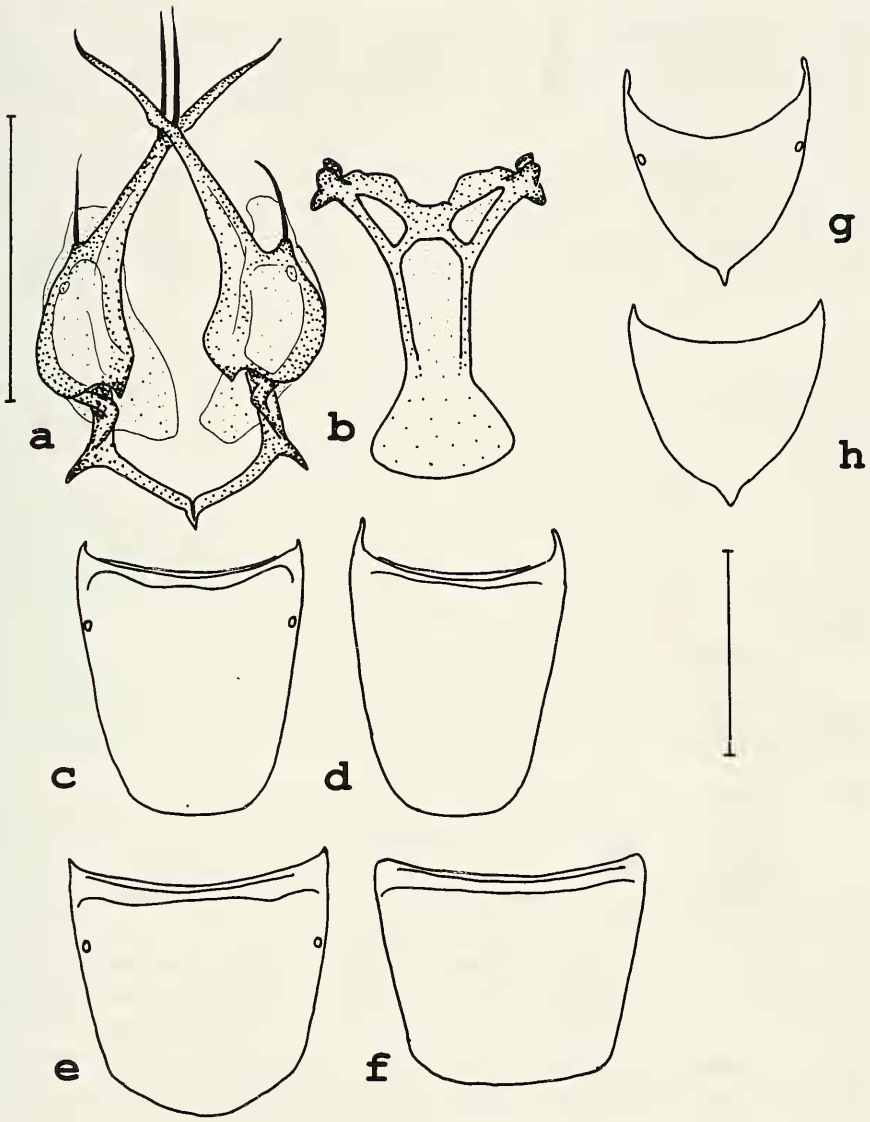

FIG. 7

Habrocerus ibericus spec. nov.: ♂ pleurites and tergite of ♂ urite VIII (a); ♂ sternite VIII (b); ♂ tergite VII (c); ♂ sternite VII (d); ♀ tergite VII (e); ♀ sternite VII (f); ♀ tergite VIII (g); ♀ sternite VIII (h); setae and punctures omitted in c-h. Scale: 0.5 mm.

According to the records known to us, *H. capillaricornis* occurs together with other congeneric species only in the Canary Islands (*H. canariensis* sp. n.) in southwest Europe (*H. ibericus* sp. n.), in Yugoslavia, Bulgaria, Greece and the Caucasus (*H. pisidicus*), whereas in most of Europe (northern and central European countries) it is the sole species present.

H. capillaricornis appears to have been introduced into North America in the late 1920s or the early 1930s. To our knowledge the first record dates back to 1931. The specimens (2 ♂♂) were collected in Natick, Massachusetts (Frost leg.), an island off Boston harbour. Subsequently, 1 ♀ was collected in Framingham Mass., ca. 20 mi. west of Boston harbour in 1934 and another ♀ in Sherbon, Mass., in 1935. In the following years the species must have spread over the states bordering on the Great Lakes, since it was first recorded from Indiana in 1943, from Illinois in 1958, from Wisconsin in 1953, from Ontario in 1951 and Quebec in 1956. Today it is known from practically all the states of the northeastern U.S. including the Great Lake area, from the southeast (Florida) and from southeastern Canada including Newfoundland. The first observation from the western U.S. dates back to 1941 in Oregon (2 ♂♂, Fender leg. (FMNH)) from where it was also recorded in the early 1940s by HATCH (1957) (SMETANA, pers. comm.). Since then the species has also been collected in California, Kansas (1942!) and Nebraska. These data seem to suggest that *H. capillaricornis* was introduced into North America at least twice, first at the East Coast (very probably Boston, Mass.), then at the West Coast.

We have seen 2 ♂♂ from Lago de Tota in Colombia, South America, which were collected at an altitude of 3000-3700 m (C. Reid leg., 1982; BMNH). According to HAMMOND (pers. comm.) the species is also known to occur in New Zealand.

BIONOMICS:

H. capillaricornis inhabits all kinds of detritus (leaf litter, fungi, under bark, etc.), especially in woodland at lower altitudes. According to HORION (1967) adult beetles are collected from March through May and from September through December. A pitfall trap study in two forests near Hannover, Germany (ASSING, unpubl.) and further collection data revealed, in contrast, that *H. capillaricornis* adults are present throughout the year, the highest locomotive activity taking place in spring (April through June). Above-ground activity was even recorded in December and January, when the temperature conditions were suitable. Data on the egg-laying period are scarce. 4 females were found to have mature eggs in their gonads in June. In Northwest Germany, immature adults were recorded in September (ASSING, unpubl.).

These results would indicate a univoltine life-cycle with an egg-laying period in spring, larval and pupal development in summer and the following generation of adults emerging from the pupae in autumn and overwintering before reproducing again in spring. However, the phenology of *H. capillaricornis* may not be quite that simple. In France, south of the Loire, PAULIAN (1941) collected a larva in April, 1938. The pupal development (pupa libra) lasted from April 24 to May 7, 1938. Near Firenze, Italy, 1 immature ♂ was collected on June 15 (Assing leg.), in Southern Spain (Ronda) 2 immature ♂♂ were sampled on March 26, and on Tenerife, Canary

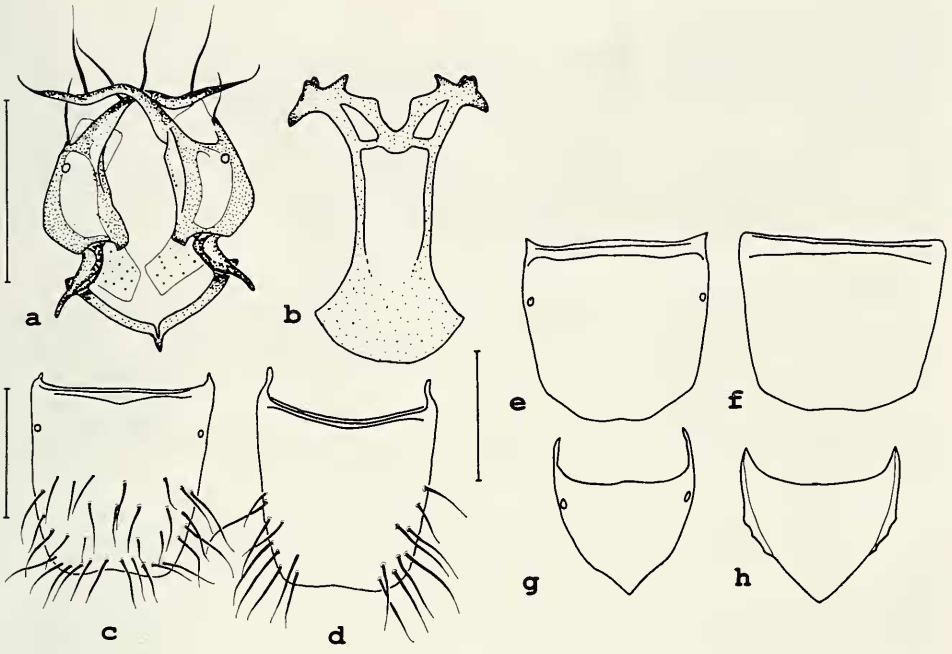

FIG. 8

Habrocerus canariensis spec. nov.: pleurites and tergite of ♂ urite VIII (a); ♂ sternite VIII (b); ♂ tergite VII (c); ♂ sternite VII (d); ♀ tergite VII (e); ♀ sternite VII (f); ♀ tergite VIII (g); ♀ sternite VIII (h); setae and puncture omitted in e-h. Scale: 0.5 mm.

Islands, 5 teneral specimens (Assing leg.) were observed on April 14. Thus, the phenology of *H. capillaricornis* seems to be strongly dependent on climatic conditions. The data from Southern Europe and the Canary Islands may even suggest a bi- or perhaps polyvoltine life-cycle. However, more material and studies are needed before drawing any further conclusions.

According to observations in Albania (HORION 1967) and in the surroundings of Hannover, Germany (ASSING, unpubl.) dispersal by flight seems to take place from April to June. On one occasion in May 1992 as many as 169 flying *Habrocerus* were collected with a car-net in 30 minutes (Hannover).

Descriptions of the larva of *H. capillaricornis* can be found in GANGLBAUER (1895) and PAULIAN (1941).

Habrocerus pisidicus Korge, 1971, stat. nov. Figs 1, 2, 4, 11, 12

Habrocerus capillaricornis ssp. *pisidicus* Korge, 1971, *Ann. Zool. Bot.* No. 67/ 58f.

HOLOTYPE: ♂, Anatolia mer., Korge & Heinze leg., Pisid. Taurus, Bozburun 1600-2000 m, 20.VII.65 (Ckor).

Further material studied:
Bosnia: (11) (DEI, Cass, Cwun).
Bulgaria: Rhodope (4) (DEI, NHMW).
Greece: Ipeiros (74) (MHNG), Crete (46) (MHNG, Cwun), Rhodos (72) (MHNG), Corfou (36) (MHNG, Ckat, Cwun), Cephallonia (13) (MHNG), Levkas (135) (MHNG, Cass), Peloponnes (1) (NHMW).
Cyprus: (58) (MHNG).
Turkey: Thrace (19) (Ckor), Central (3) (MHNG), Southwest (110) (Ckor, MHNG, NHMW, Cass, Cwun); Northwest (44) (MHNG, NHMW).
Transcaucasia? (identification uncertain): Georgia (3 ♀♀) (Csch).

Description:

3.0-4.0 mm. Size and body proportions as in *H. capillaricornis*. Colour, especially of head, pronotum and elytra, usually slightly darker than in *H. capillaricornis*, dark brown to pitchy brown.

Pronotum with the whole surface generally covered with fine transverse microsculpture. Setae, punctation and shape of pronotum and elytra as in *H. capillaricornis*. Elytral microsculpture frequently more distinct.

Appendages and first abdominal segments similar to *H. capillaricornis*.

♂: hind margin of tergite VII almost straight with rounded angles (Fig. 4c), that of sternite VII ± rounded (Fig. 4d); appendices of pleurites VIII with 1 long seta (Fig. 4a), central emargination of sternite VIII broad with short posterior processes (Fig. 4b); internal sac with a row of ca. 11 large spines of elongate triangular shape (Fig. 11c).

♀: tergite VII with weakly rounded, sternite VII with almost straight hind margin (Figs 4e-f); tergite and sternite VIII shortly pointed posteriorly (Figs 4g-h).

Distribution:

H. pisidicus has been recorded from Turkey (Thrace; northern, western and central parts of Anatolia), from Greece (including Crete and islands), Cyprus, Bulgaria and Bosnia. The records from Transcaucasica (only ♀♀) remain doubtful. The species was observed to occur together with *H. capillaricornis* in Bosnia, Greece (Levkas, Corfou, Epire) and the European part of Turkey and together with *H. cyprensis* on Cyprus (Fig. 12).

Bionomics:

Little is known about the bionomics of *H. pisidicus*. It has been collected over a wide range of altitudes (50 - ca. 1800 m) in various kinds of litter, frequently together with *H. capillaricornis*, in December, January and from April through September. Teneral specimens were observed in April, May, July and August.

Addendum:

After the manuscript had gone to press, *H. pisidicus* was also recorded from Southern Italy: 22♂♂, 20♀♀, Mte. Gargano (various localities), in stands of *Quercus* spp., 400-900m, 30.XII.1994, leg. & coll. Assing; 3♂♂, 1♀, Puglia, Martina (TA), 17.XII.89, leg. & coll. Montemurro.

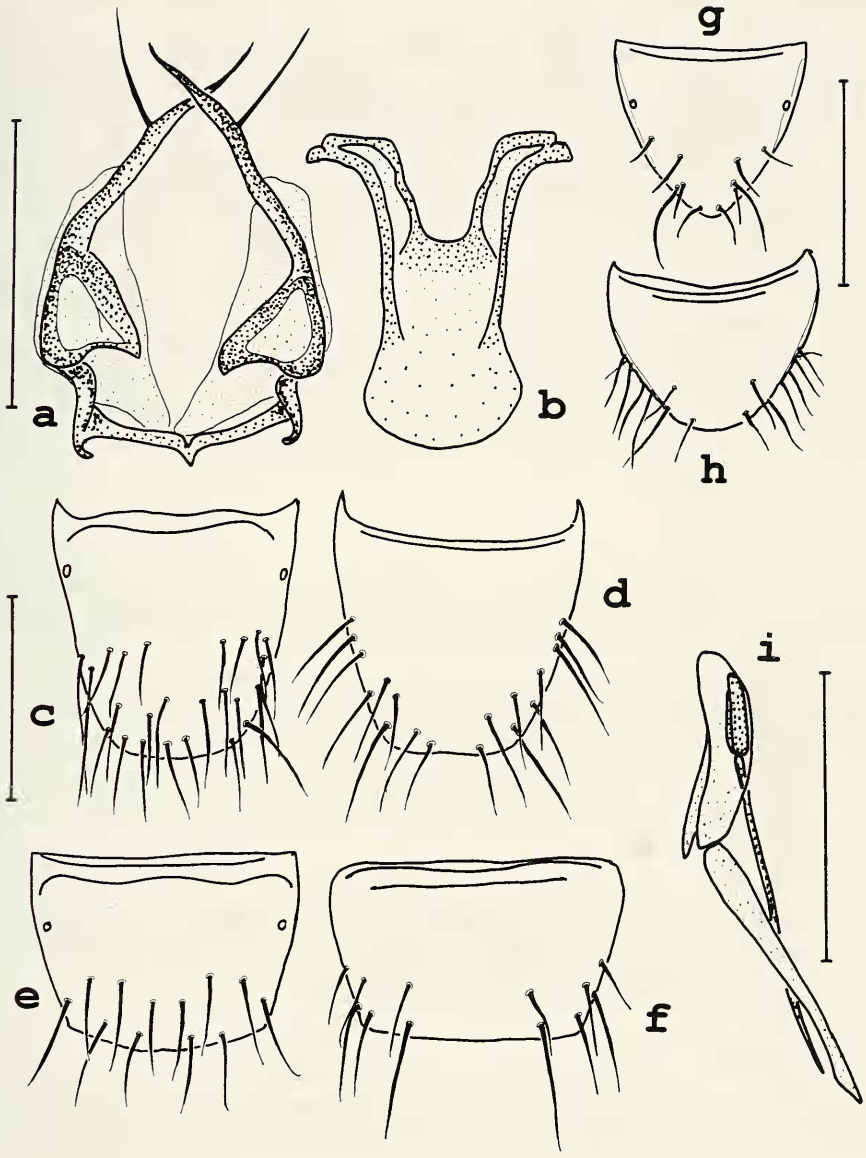

FIG. 9

Habrocerus rougemonti Pace: ♂ pleurites and tergite VIII (a); ♂ sternite VIII (b); ♂ tergite VII (c); ♂ sternite VII (d); ♀ tergite VII (e); ♀ sternite VII (f); ♀ tergite VIII (g); ♀ sternite VIII (h); ♂ urite IX in lateral view (i). Scale: 0.5 mm.

Habrocerus simulans spec. nov. Figs 5, 11, 12

HOLOTYPE: ♂; labels: Israel, Cotê Mt Carmel, 100 m, 17.IV.1982, Besuchet & Löbl (MHNG).

PARATYPES: *Israel:* 54 ♂♂, 50 ♀♀: same data as holotype; 17 ♂♂, 32 ♀♀: Mt Carmel, Little Switzerland, 28.V.73; 34 ♂♂, 27 ♀♀: Galilée, au-dessous Safad, 500 m, 30.V.73, Löbl; 12 ♂♂, 12 ♀♀: Galilée, Eilon N Betzel, 20.IV.82, Besuchet & Lôbl; 16 ♂♂, 10 ♀♀: Galilée, Montefort, 19.IV.82, Besuchet & Löbl; 4 ♂♂, 2 ♀♀: Galilée, Mt Meron, 900-1000 m, 27.V.72, Löbl; 1 ♂, 3 ♀♀: Galilée, Mt Meron, 700 m, 26.IV.82, Besuchet & Löbl; 1 ♂: Galilée Tel Dan, 24.IV.82, Besuchet & Löbl; 1 ♂: Golan, Gilbon, 300 m, 15.IV.82, Besuchet & Löbl; 1 ♀: Golan, Banias, 24.IV.82, Besuchet & Löbl; 1 ♀: Coté Akko, N Naaman, 18.IV.82, Besuchet & Löbl (MHNG, Cass, Cwun).

Lebanon: 5 ♂♂, 8 ♀♀: Jeita, 26.III.75, Besuchet; 6 ♂♂, 6 ♀♀: env. Damour, 28.III.75, Besuchet (MHNG, Cass, Cwun).

Turkey: 2 ♀♀: Artvin, Pirnalli, Massif du Karkal Dagi, 1600 m, 11.IV.86. 7 ♂♂, 10 ♀♀: Artvin, Pirnalli, Massif du Karkal Dagi, 1250 m, 11.IV.86; 3 ♂♂, 3 ♀♀: Artvin, s/Artvin, 800 m, 7.VI.86, Besuchet, Burckhardt & Löbl; 10 ♂♂, 3 ♀♀: Mersin, Tarsus, Gülek, 1550 m, 30.IV.78, Besuchet; 7 ♂♂, 2 ♀♀: Tokat-Almus, 1200 m, 21.IV.67, Besuchet; 1 ♀: Adana, Kozan, 5.V.67, Besuchet; 13 ♂♂, 14 ♀♀: Antakya, 400-850 m, V.78, Besuchet & Löbl (MHNG, Cass, Cwun).

DESCRIPTION:

Size, body proportions, setae, punctation and colour as in *H. capillaricornis*.

Pronotum with fine transverse microsculpture on whole surface (as in *H. pisidicus*).

♂: hind margins tergite and sternite VII nearly straight to weakly rounded (Figs 5c-d); appendices of pleurites VIII with one long seta (as in *H. pisidicus*) (Fig. 5a); emargination of sternite VIII broad and U-shaped, posterior processes very indistinct (Fig. 5b); internal sac with 5-6 relatively large, elongate spines (Fig. 11d).

♀: tergites and sternites VII and VIII as in *H. pisidicus* (Figs 5e-h).

DISTRIBUTION:

H. simulans is widely distributed in the Eastern Mediterranean region (Fig. 12). It has been recorded from Israel, Lebanon and East Anatolia, from where we have not seen any other species of *Habrocerus* yet.

BIONOMICS:

Ecological data are scarce. *H. simulans* apparently inhabits a wide range of altitudes (100-1600 m). Immature specimens were found in March and April.

Habrocerus cyprensis spec. nov. Figs 6, 11, 12

HOLOTYPE ♂; labels: Chypre, Baths of Aphrodite, 22.VII.77, C. Besuchet (MHNG).

PARATYPES: 11 ♂♂, 7 ♀♀: same data as holotype; 5 ♂♂, 2 ♀♀: Chypre, Yerowasa, 14.VII.77, C. Besuchet; 1 ♂, 6 ♀♀: Chypre, Ayios Dhimitrios, 600 m, 9.VII.77; 2 ♂♂, 1 ♀: Chypre,

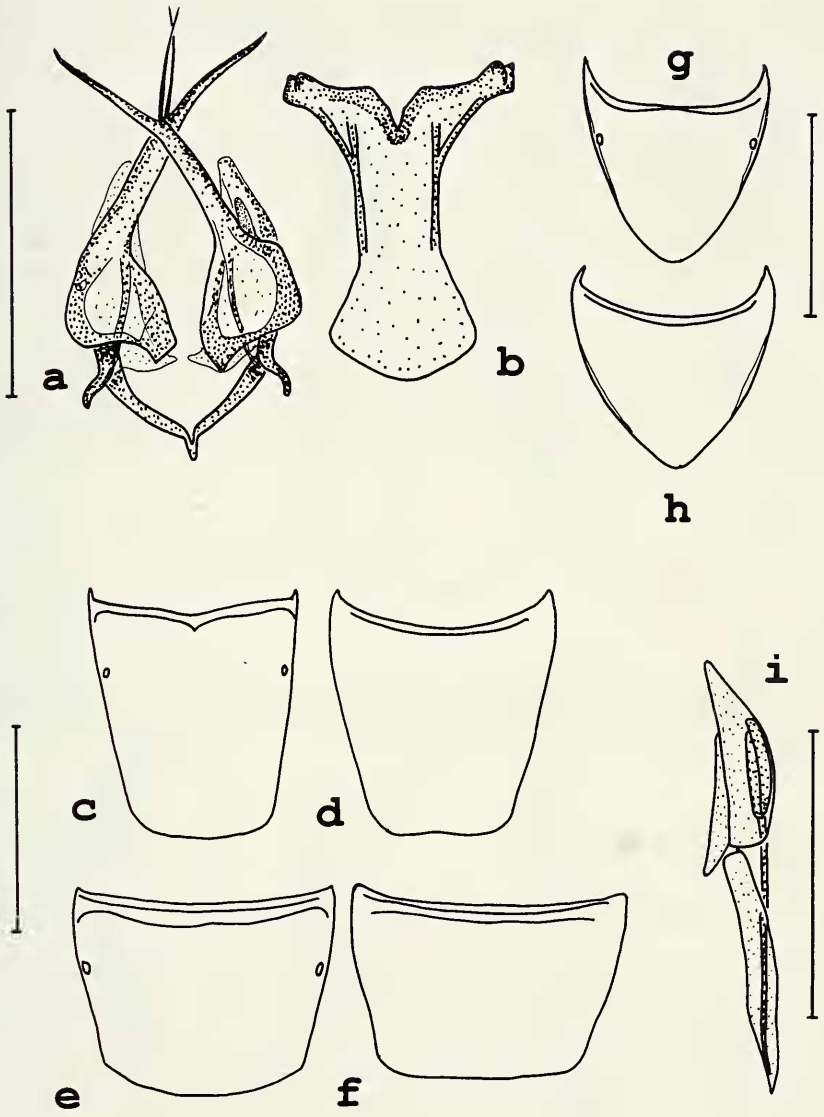

FIG. 10

Habrocerus indicus spec. nov.: ♂ pleurites and tergite VIII (a); ♂ sternite VIII (b); ♂ tergite VII (c); ♂ sternite VII (d); ♀ tergite VII (e); ♀ sternite VII (f); ♀ tergite VIII (g); ♀ sternite VIII (h); ♂ urite IX in lateral view (i); setae and punctures omitted in c-h. Scale: 0.5 mm.

Mamonia, 14.VII.77, C. Besuchet; 2 ♂♂, 1 ♀: Chypre, Stroumbi, 400 m, 22.VII.77, C. Besuchet; 1 ♂: Chypre, Caledonian Falls, 1400 m, 1.VII.77, C. Besuchet; 1 ♂: Chypre, V. de Cêdres, 1200 m, 12.VII.77, C. Besuchet (MHNG, Cass, Cwun).

Description:

Size, body proportions, setae, punctation, microsculpture and colour as in *H. capillaricornis*.

♂: tergite VII with nearly straight, sternite VII with shallowly concave hind margin (Figs 6c-d); appendices of pleurites VIII with 2 setae (Fig. 6a); central emargination of sternite VIII similar to *H. capillaricornis*, but broader and with longer, slightly converging posterior process (Fig. 6b); internal sac without dark spines (Fig. 11f).

♀: tergite VII rounded, the corresponding sternite shallowly concave posteriorly (Figs 6e-f); acutely pointed process of hind margin of tergite VIII longer than in *H. capillaricornis* (Fig 6g); sternite VIII shortly pointed posteriorly (similar to *H. pisidicus*) (Fig. 6h).

Distribution:

H. cyprensis appears to be endemic to Cyprus (Fig. 12).

Bionomics:

The species apparently inhabits a wide range of altitudes. At several localities it was collected together with *H. pisidicus*.

Habrocerus ibericus spec. nov. Figs 7, 11, 12

Holotype: ♂, Portugal, Algarve, 8 km N S. Brás de Alportel, 400 m, 1.VI.92, Wunderle (Cwun).

Paratypes: 22 ♂♂, 18 ♀♀: same locality as holotype, 29.V.-4.VI.92 (Cass, Cwun); 2 ♂♂, 1 ♀: Gallia merid., Ste. Maxime Var., 26.III.13, W. Liebmann (DEI); 1 ♂: E., La Iruela, Jaen, Queva segreta del Sagrio, 30.III.87, Zoia leg. (Czan); 1 ♂: E., Castellon de la Plana, env. Cabanes, 320 m, 19.III.87, Zoia leg. (Czan); 1 ♂: E., Algeciras, Cadiz, Sierra del Nino, 180 m, 26.III.87, Zoia leg. (Czan); 7 ♂♂, 5 ♀♀: Espagne, Castellon, Querol près Morella, 5.V.66, Besuchet (MHNG, Cass, Cwun); 1 ♂: Sierra Guadarrama, Spain, H. Franz leg. (NHMW); 1 ♀: Espagne, Huelva, Agua Fria près Jabugo, 3.VI.66, Besuchet (MHNG); 1 ♂: Espagne, Castellon, Cálig près Benicarlo, 6.V.66, Besuchet (MHNG); 1 ♂: Espagne, Cuenca Las Torcas, 19.V.60, Besuchet (MHNG); 1 ♂, 2 ♀♀: Espana, Provinz Cadiz, Algeciras, El Bujeo, 340 m, 13.IV.1983, leg. et coll. Elbert; 4 ♂♂, 2 ♀♀: E., Andalusien (GR), Sierra Nevada, Capileira, 1400 m, 23.III.1994, Assing & Wunderle leg. (Cass, Cwun); 1 ♂, 3 ♀♀: E., Andalusien (GR), Sierra Nevada, Lanjaron, 600 m, 23.III.1994, Assing leg. (Cass.); 2 ♂♂, 1 ♀: E., Andalusien (MA), Sierra de Palmitera, SO Ronda, 900 m, 24.III.1994, Assing leg. (Cass); 17 ♂♂, 7 ♀♀: E., Andalusien (CA), Umg. Algeciras, Sierra de Luna, 200 m, 28.III.1994, Assing & Wunderle leg. (Cass, Cwun); 4 ♂♂, 2 ♀♀: E., Andalusien (CA), Umg. Algeciras, Sierra de Luna, 350 m, 28.III.1994, Assing & Wunderle leg. (Cass, Cwun).

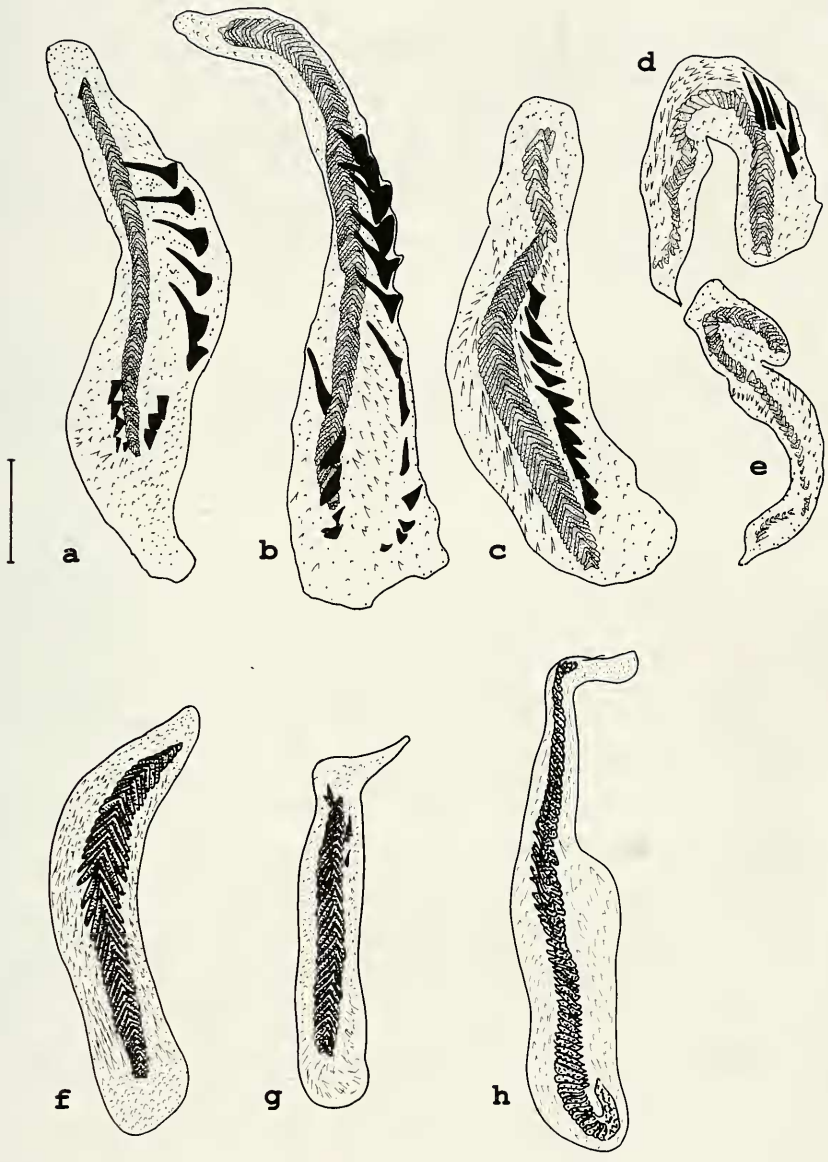

FIG. 11

The *Habrocerus capillaricornis*- and the *H. rougemonti*-group: Internal sacs of *H. capillaricornis* (a), *H. canariensis* (b), *H. pisidicus* (c), *H. simulans* (d), *H. ibericus* (e), *H. cyprensis* (f), *H. rougemonti* (g) and *H. indicus* (h). Scale: 0.25 mm.

Description:

Size, body proportions, setae, punctuation and colour as in *H. capillaricornis*.

Pronotum with fine transverse microsculpture on whole surface (as in *H. pisidicus*).

♂: tergite and sternite VII with nearly straight hind margin (as in *H. simulans*) (Figs 7c-d); appendices of pleurites VIII with one seta (Fig. 7a); emargination of sternite VIII broad and with very indistinct posterior processes (as in H. simulans) (Fig. 7b); internal sac small and without dark spines (Fig. 11e).

♀: tergites and sternites VII and VIII as in *H. simulans* (Figs 7e-h).

Distribution:

According to the material available to us the area of distribution of *H. ibericus*, which apparently completely overlaps with a part of that of *H. capillaricornis*, ranges from the south of France to the south of Spain and Portugal. In addition to the records indicated above, 2 ♀♀ were collected in Cantabria in the northwest of Spain.

Bionomics:

H. ibericus was collected in leaf litter especially in stands of *Quercus suber* (Portugal, type locality; Spain, Algeciras) and *Qu. ilex* (Spain, Castellon de la Plana; Sierra Nevada; Sierra de Luna), but also in woodland composed of other trees, at altitudes of 180-1400 m. On several occasions, at the type locality, in the Sierra Nevada and in the Sierra de Luna the species was sieved together *H. capillaricornis*. Several immature adults were collected on March 28, 1994, near Algeciras, and one teneral specimen was taken in the middle of April.

Habrocerus canariensis spec. nov. Figs 8, 11, 12

Holotype: ♂, E., La Gomera, El Cedro, 900 m, 2.XI.1990, Wunderle (Cwun).

Paratypes: 4 ♂♂, 4 ♀♀: same data as holotype (Cass, Cwun); 2 ♂♂, 2 ♀♀: E., La Gomera, El Cedro, Erem. Nostra Sen., 1000 m, 27.-28.X.90 (Cwun); 1 ♂: La Gomera, El Cedro, 7.I.83, P. Oromi (MCNT); 1 ♀: Hierro, Manca Fite, 16.IV.84, P. Oromi (MCNT); 4 ♂♂, 1 ♀: Hierro, El Golfo, 800-1000 m, 8.III.83, Besuchet (MHNG); 2 ♂♂, 1 ♀: Gran Canaria, Barranco de Los Cernicalos, 19.VI.85, A. Aquiar (MCNT); 1 ♀ La Palma, S Gallegos, N-Seite, 1000 m, 11.III.84, Martens (MNS); 1 ♂, 2 ♀♀: La Palma, Los Tilos; 12.III.90, Schwaller (MNS); 1 ♀: Canaries, La Palma, La Galga, 7.IX.93 (Csch); 1 ♂, 4 ♀♀: Canaries, M. Cameron, 1955 (BMNH); 1 ♀: Canary Isl. (BMNH).

Description:

3.5-4.5 mm. Overall appearance almost bicoloured: head blackish brown; pronotum and abdomen, except for the hind margins of the tergites, brown; elytra lighter in colour, reddish brown, usually somewhat darkened in the posterior angles.

Body proportions, setae and punctation, on the whole, similar to *H. capillaricornis*, but the abdomen has a slightly more parallel shape and the posterior angles of the elytra are more broadly truncate.

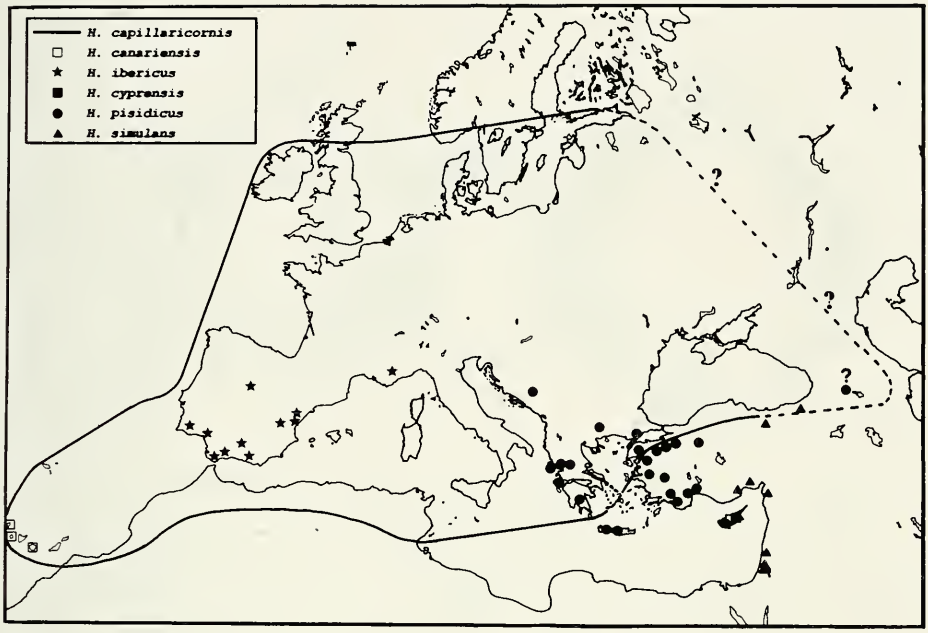

FIG. 12

Distribution of the species of *Habrocerus* in the Western Palaearctic region.

♂: tergite and sternite VII with shallowly concave hind margins (Figs 8c-d); appendices of pleurites VIII strongly curved and with 2 long setae (Fig. 8a); emargination of sternite VIII deep and U-shaped, without posterior processes; anterior dilatation of sternite VIII angular (Fig. 8b); internal sac with 6 large and wide-based spines and several additional, mostly elongate spines of various shapes (Fig. 11b).

♀: tergite and sternite VII relatively broad with shallowly concave hind margins (Figs 8e-f); tergite and sternite VIII pointed, the latter with distinct setal insertions laterally (Figs 8g-h).

DISTRIBUTION:

H. canariensis is endemic to the Canary Islands (La Gomera, La Palma, Gran Canaria and Hierro), where it co-occurs with *H. capillaricornis* on La Palma and La Gomera.

BIONOMICS:

On La Gomera *H. canariensis* was sieved from *Laurus* leaf litter at higher altitudes (900-1000 m), where *H. capillaricornis* was absent. Adult specimens were observed in January, March, April, October and November.

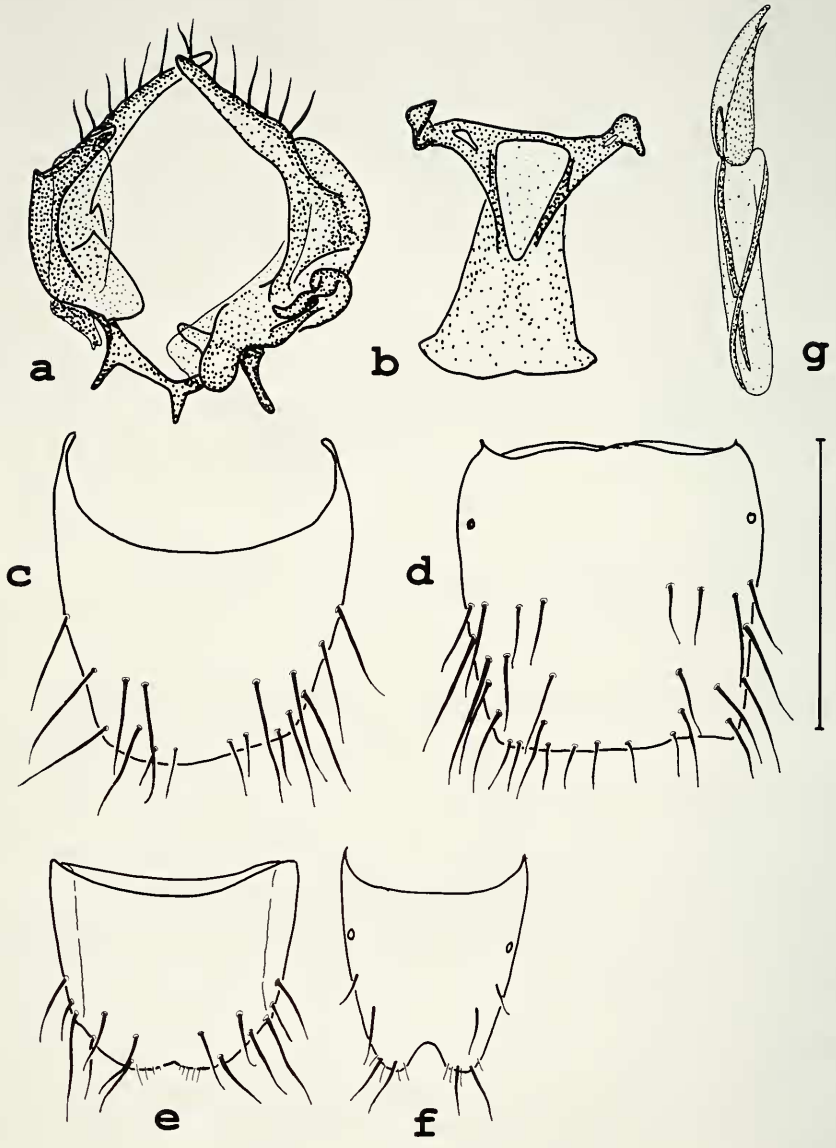

FIG. 13

Habrocerus schwarzi Horn: pleurites and tergite of ♂ urite VIII (a); ♂ sternite VIII (b); ♂ sternite VII (c); ♂ tergite VII (d); ♀ sternite VIII (e); ♀ tergite VIII (f); ♂ urite IX in lateral view (g). Scale: 0.5 mm.

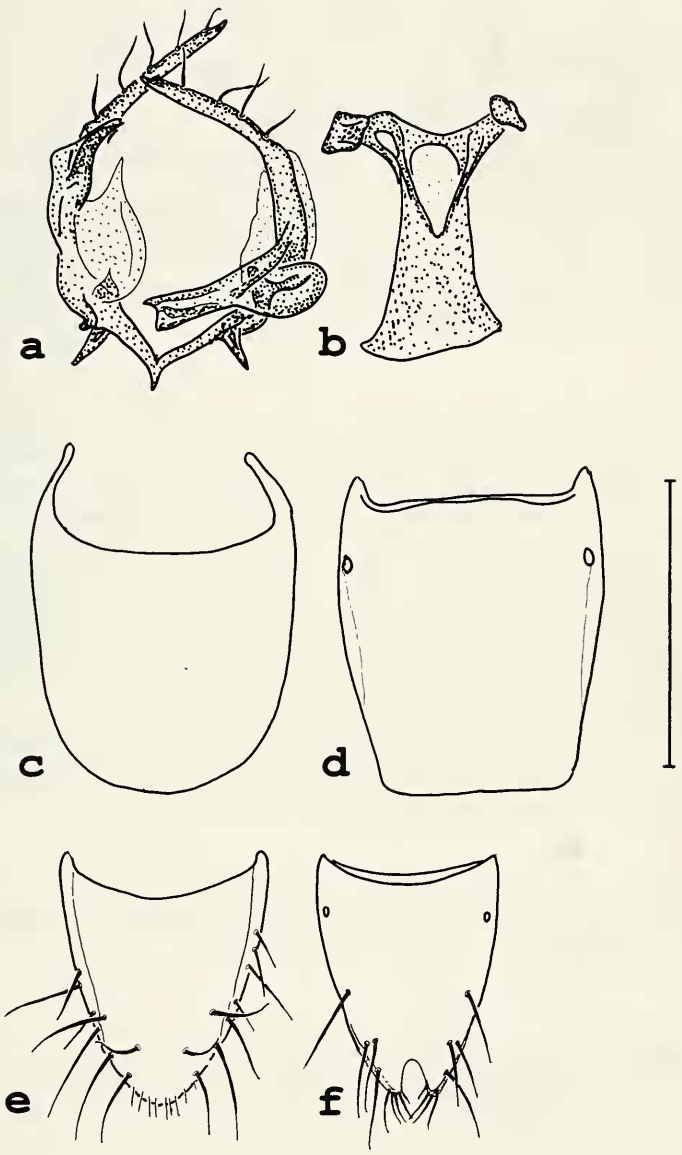

FIG. 14

Habrocerus tropicus Wendeler: pleurites and tergite of ♂ urite VIII (a); ♂ sternite VIII (b); ♂ sternite VII (c); ♂ tergite VII (d); ♀ sternite VIII (e); ♀ tergite VIII (f); setae and punctures omitted in c-d. Scale: 0.5 mm.

II. The *Habrocerus rougemonti* species group

Habrocerus rougemonti Pace, 1987 Figs 9, 11

Habrocerus rougemonti Pace 1987, *Elytron* 1: 5ff. figs.

HOLOTYPES: ♂, Thailand, Chiang Mai Prov., Doi Suthep, III.1987, leg. Rougemont (MCSNV).

FURTHER MATERIAL STUDIED:

Thailand: 13 ♂♂, 19 ♀♀: NE Bangkok, Khao Yai Nat. Park, Khao Khieo, 1150 m, Burckhardt & Löbl, 28.XI.85; 5 ♂♂, 6 ♀♀: Chiang Mai, Doi Inthanon, 1250 m, 6.XI.1985, Burckhardt & Löbl; 1 ♂: Prov. Chiang Mai, Doi Suthep, 1150 m, 14.I.87, P. Schwendinger; 3 ♂♂, 2 ♀♀: Prov. Chiang Mai, Doi Suthep, 1400 m, 5.XI.85, Burckhardt & Löbl; 3 ♂♂: Chiang Mai, Mar Nang Kaeo, 900 m, 54 km NE Chiang Mai, 3.XI.85, Burckhardt & Löbl (NHMG, Cass, Cwun).

DESCRIPTION:

1.8-3.5 mm. Colour, apart from the yellowish antennae, general appearance, setae, microsculpture on head and elytra as in *H. capillaricornis*. Pronotum, however, completely without microsculpture, antennae slenderer and abdomen very shiny with much less dense punctation and without any trace of microsculpture.

♂: tergite VII with weakly rounded, sternite VII with shallowly concave hind margins (Figs 9c-d); appendices of pleurites VIII with 1 seta; in contrast to the species of the *H. capillaricornis*-group without seta near the spiraculum of urite VIII (Fig. 9a); sternite VIII with extremely deep and broad emargination (Fig. 9b); posterior apex of sclerites IX rounded in lateral view (Fig. 9i); internal sac without large dark spines, internal row with ca. 30 semitransparent triangles (Fig. 11g).

♀: tergite and sternite VII transverse, the former with weakly rounded and the latter with nearly straight hind margins (Figs 9e-f); tergite VIII bluntly pointed, sternite VIII rounded posteriorly (Figs 9g-h).

DISTRIBUTION:

At present the species is only known from the north of Thailand and the surroundings of Bangkok.

BIONOMICS:

H. rougemonti was recorded at elevations of 900-1400 m. Several teneral specimens were collected in the beginning of November.

Habrocerus indicus spec. nov. Figs 10, 11

HOLOTYPE: ♂, India; W. Bengal, Darjeeling Distr., Ghoom-Lopchu, 2000 m, 12.X.78, Besuchet & Löbl (MHNG).

PARATYPES: 1 ♀: same locality as holotype (MHNG); 3 ♂♂, 1 ♀: W. Bengal, Darjeeling Distr., Algarah-Labha, 1900 m, 11.X.78, Besuchet & Löbl (MHNG, Cass, Cwun), 1 ♀: India, Sikkim. Chungtang, 24.II.1952, T. Clay leg. (BMNH).

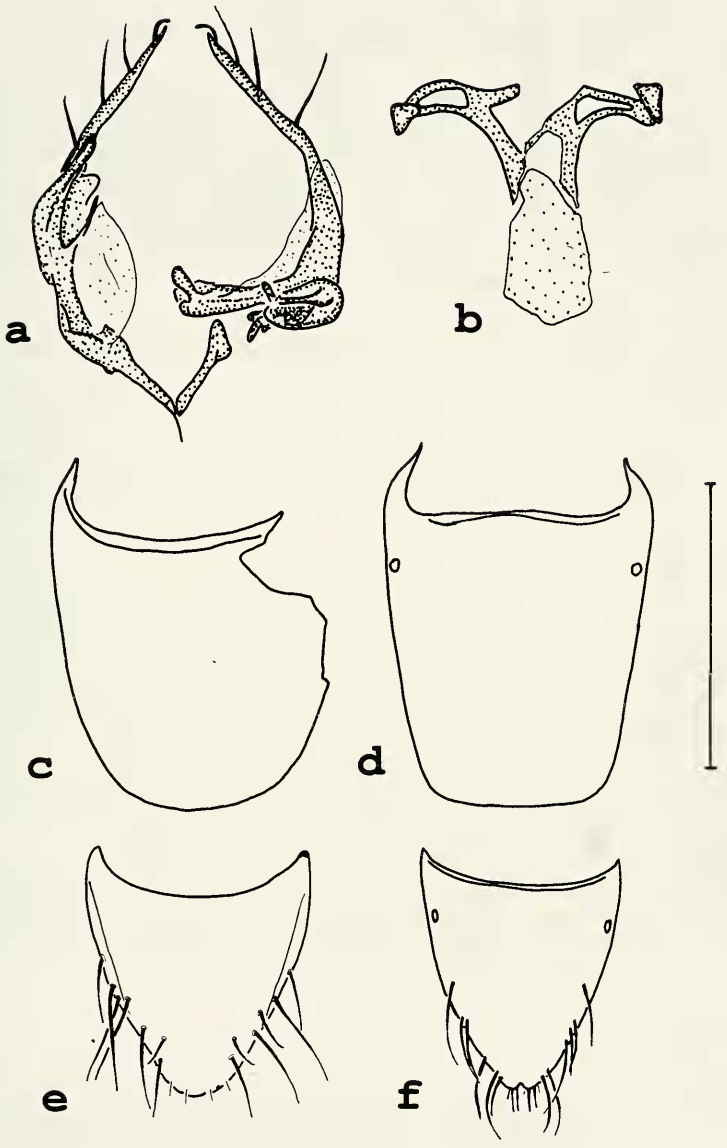

FIG. 15

Habrocerus costaricensis spec. nov.: pleurites and tergite of ♂ urite VIII (a); ♂ sternite VIII (b); ♂ sternite VII (c); ♂ tergite VII (d); ♀ sternite VIII (e); ♀ tergite VIII (f); setae and punctures omitted in c-d. Scale: 0.5 mm.

Description:

Size, body proportions, setae, punctation, microsculpture and colour as in *H. rougemonti*.

♂: tergite VII with weakly rounded, sternite VII with shallowly concave hind margins (as in *H. rougemonti*) (Figs 10c-d); appendices of pleurites VIII with 1 seta, shape of pleurites slightly different from that in *H. rougemonti*; without seta near the spiraculum of urite VIII (Fig. 10a); sternite VIII with deep V-shaped emargination, central part of sternite narrower than in *H. rougemonti* (Fig. 10b); posterior apex of sclerites IX pointed in lateral view (Fig. 10i); internal sac without large dark spines, internal row with ca. 80 semitransparent triangles (Fig. 11h).

♀: tergite and sternite VII transverse, the former with weakly rounded and the latter with nearly straight hind margins (Figs 10e-f); tergite and sternite VIII bluntly pointed posteriorly (Figs 10g-h).

Distribution:

H. indicus is only known from the Himalayan regions in the north of India.

Bionomics:

Unknown.

III. The *Habrocerus schwarzi* species group

Habrocerus schwarzi Horn — Figs 13, 18

Habrocerus schwarzi Horn, 1877, *Trans. Amer. Ent. Soc.* 6: 124.

Lectotype: ♀, designated here; labels: Mic, Paratype, 3146, G.H. Horn collection, Lectotypus Habrocerus schwarzi Horn 1877, desig. Assing & Wunderle 1992 (MCZ).
Paralectotype: ♀, labels: Mic, Paratype, 3146, G.H. Horn Collection (MCZ).

5 old specimens from the MCZ (G.H. Horn collection and LeConte collection) were examined. Although one of them was labeled 'type' and two further specimens were labeled 'paratype' there remained considerable doubt as to the exact identity of the holotype. Therefore, we chose to designate a lectotype from the Horn collection.

Further material studied:
165 specimens from the BRI (157) and FMNH (8).

Description:

2.5-3.0 mm. Colour variable, usually with head, pronotum, antennae and anterior parts of tergites light to dark brown, elytra and hind margins of tergites yellowish to yellowish brown and the legs yellow.

Head somewhat shining with fine transverse microsculpture; antennal segments shorter than in *H. capillaricornis*, segment 3 distinctly shorter 4, segments 4-10 subequal in length. Pronotum 1.4-1.5x wider than long and with transverse microsculpture on whole surface. Anterior and lateral setae closer to margin, anterio-lateral seta distinctly closer to anterior angle than in *H. capillaricornis*.

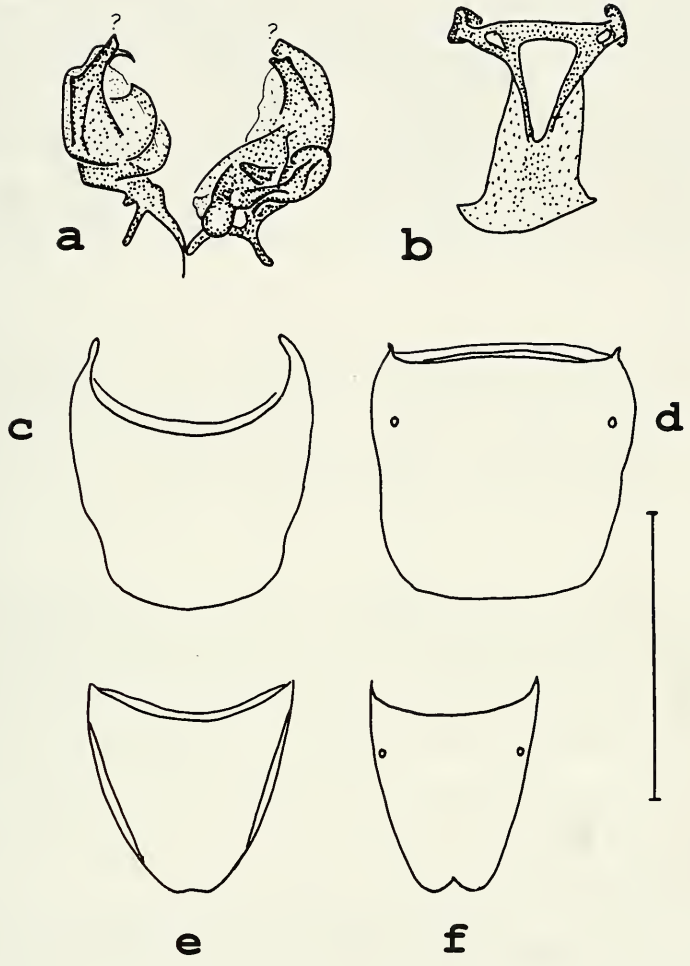

FIG. 16

Habrocerus tichomirovae (Filatova): pleurites and tergite of ♂ urite VIII, partly damaged (a); ♂ sternite VIII (b); ♂ sternite VII (c); ♂ tergite VII (d); ♀ sternite VIII (e); ♀ tergite VIII (f); setae and punctures omitted in c-f. Scale: 0.5 mm.

Elytra 1.7-1.8x wider than long (at suture), about as long as pronotum, with transverse microsculpture and sparse micropunctation.

Tarsi of middle and hind legs shorter than in *H. capillaricornis.*

Abdomen with subdued shine due to short yellowish pubescence and fine dense microsculpture; number of setae on hind margins of tergites increasing caudadly.

♂: tergite and sternite VII with often slightly asymmetrical, almost straight to weakly rounded hind margins (Figs 13c-d); sclerites of urites VIII and IX arranged asymmetrically (Figs 13a-b, g), a typical character shared by all the species of the *H. schwarzi* species group; appendices of pleurites VIII with 6-7 setae (Fig. 13a); sternite VIII without emargination, laterally with two asymmetric processes, anterior dilatation with lateral angles (Fig. 13b); internal sac with two rows of weakly sclerotized, roughly triangular structures (Fig. 18a).

♀: tergite VIII with ± deep U-shaped, relatively broad emargination (Fig. 13f), sternite VIII rounded with shallow central concavity posteriorly (Fig. 13e).

DISTRIBUTION:

Apart from one record in Alberta (George Lake, 11 specimens) all the material examined was collected in the northeast of North America, especially in Canada (Manitoba, Ontario, Quebec; altogether 134 specimens); only 20 specimens were from the U.S. (Massachusetts, Vermont, New Hampshire, New York, Wisconsin, Minnesota, Tennessee and Ohio). MOORE & LEGNER (1979) report the species for Michigan.

BIONOMICS:

According to the collection data on the labels of the specimens examined *H. schwarzi* appears to have a preference for old or dead fungi. It has also been found on moose dung, dead grouse and in leaf litter (one record each). All of the specimens were collected during the period from June through November, with a maximum in August. Immature adults were taken on August 5 and on September 15 (1 specimen each).

Habrocerus tropicus Wendeler, 1956 Figs 14, 18

Habrocerus tropicus Wendeler, 1956, *Dusenia* 7: 264f.

HOLOTYPE: ♀, Brasilien, Nova Teutonia, 27°11' B, 52°23' L, 300-500 m, Fritz Plaumann, Holotypus, Habrocerus tropicus n. sp., Wendeler det. (MHB).

PARATYPES: 1 ♂: same data as holotype (MHB); 1 ♀: Brasilien, Nova Teutonia, Fritz Plaumann coll. (MHB).

FURTHER MATERIAL STUDIED:
4 ♂♂, 6 ♀♀: Brazil, Nova Teutonia, 3-500 m, 27°11' B, 52°23' L, 1960-1972, F. Plaumann leg. (BRI); 1 ♂; 4 ♀♀: Brazil, Chapeco, 27°07' B, 52°36' L, 1960, F. Plaumann leg. (BRI); 5 ♀♀: Brazil, Sinimbu, 29°30', 52°30', 1960, Plaumann leg. (BRI); 1 ♀: Brazil, 18 km NE Oriximina, 1969, J.M. & B.A. Campbell leg. (BRI); 1 ♀: Brazil-Parana, Guarapuava, H. Schneider leg. (BRI); 1 ♀: Brazil, Nova Teutonia, F. Plaumann leg. (NHMV); 9 ♂♂, 28 ♀♀: Brazil, Nova Teutonia, 3-500 m, 27°11' B, 52°23' L, 1938, 1953-54, F. Plaumann leg. (FMNH); 6 ♂♂, 4 ♀♀: Brazil, Nova Teutonia (FMNH).

DESCRIPTION:

Size, body proportions, setae and microsculpture as in *H. schwarzi*; however, clearly darker in colour, in mature specimens usually whole body dark brown to

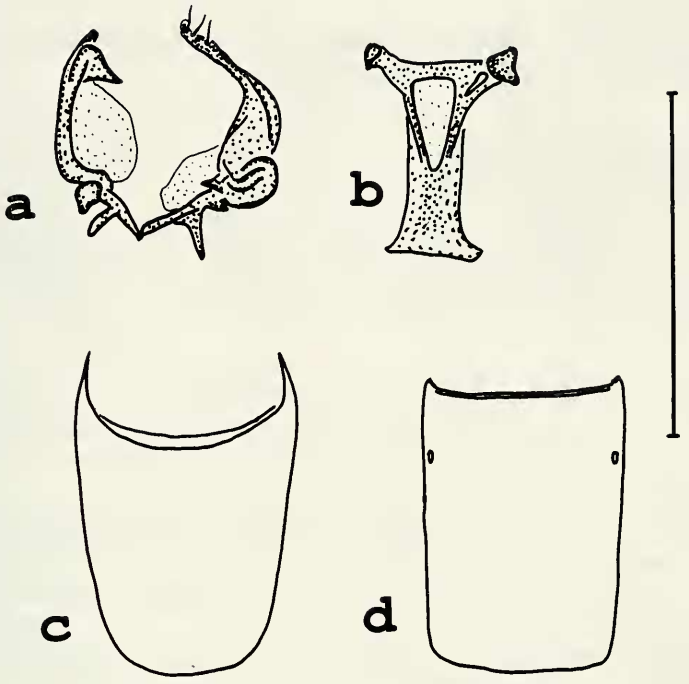

FIG. 17

Habrocerus schillhammeri spec. nov.: pleurites (partly damaged) and tergite of ♂ urite VIII (a); ♂ sternite VIII (b); ♂ sternite VII (c); ♂ tergite VII (d); setae and punctures omitted in c-d. Scale: 0.5 mm.

almost black with only the narrow hind margins of the tergites, and often the elytra, the legs, the antennae and the tip of the abdomen lighter.

♂: tergite VII with straight (Fig. 14d), sternite VII with rounded margin (Fig. 14c); sclerites of urites VIII and IX asymmetrical (Figs 14a-b; appendices of pleurites VIII with 5 setae, the subapical seta strongly bent (Fig. 14a); shape of sternite VIII similar to that in *H. schwarzi* (Fig. 14b); internal sac very long containing a large number of small sclerotized granula apically, but without rows of triangular structures (Fig. 18c).

♀: tergite VIII with deep and narrow, U-shaped emargination (Fig. 14f), the corresponding sternite rounded posteriorly (Fig. 14e).

DISTRIBUTION:

With the exception of 1 ♀ (Oriximina, North Brazil) all the specimens were collected in the southernmost part of Brazil (Santa Catarina, Rio Grande do Sul), south of Sao Paolo.

BIONOMICS:

The specimens examined were collected at elevations of 300-600 m from March through May and from July through December.

Habrocerus costaricensis spec. nov. Fig. 15

TYPES: Holotype ♂, Costa Rica, Sa. Isidro ek Cor. (?), 3.VIII.39, A. Bierig Collection (FMNH). PARATYPES: 3 ♀♀: Costa Rica, Carpintera, 5.XI.39; 2 ♀♀: Costa Rica, Carpintera, 6.VIII.39; 1 ♀: Costa Rica, Carpintera, 6.VIII.41; 1 ♀: Carpintera, VIII.43; 1 ♀: Costa Rica, Sa. Isidro ek Cor. (?), 3.VIII.39; 1 ♀: Costa Rica, Tres Rios, 1.IX.40 (FMNH, Cass, Cwn).

DESCRIPTION:

Size, body proportions, setae and microsculpture as in *H. schwarzi*; colour darker, body brown to pitchy brown (often similar to *H. tropicus*) with the elytra, the posterior margins of the tergites and especially the tip of the abdomen usually somewhat lighter; legs and antennae light brown to brown.

♂: tergite VII with straight, sternite VII with rounded hind margin (Figs 15c-d); sclerites of urites VIII and IX arranged asymmetrically (Figs 15a-b); appendices of pleurites VIII with 4 setae, the subapical seta strongly bent (Fig. 15a); posterior lateral processes of sternite VIII long an asymmetrical (Fig. 15b).

♀: tergite VIII strongly converging posteriorly with very small emargination (Fig. 15f); hind margin of sternite VIII rounded (Fig. 15e).

DISTRIBUTION:

So far only known from Costa Rica.

BIONOMICS:

Apart from the data indicated above, the bionomics of *H. costaricensis* remain unknown.

Habrocerus tichomirovae (Filatova, 1981), comb. nov. Fig. 16

Nomimocerus tichomirovae Filatova, 1981, *Rev. Ent. URSS* 60: 120f. figs.

HOLOTYPE ♂, Primorskij kraj, pos. Barabasch-Levada, pojma r. Komissarovki pod, 24.VII.1978, Filatova (ZIAWP).

PARATYPES examined: 2 ♀♀, Primorskij kraj, Sichote-Alinskij Zapovednik, pod solomoj, 24.VIII.1978, Filatova (ZIAWP).

FURTHER MATERIAL STUDIED: 1 ♀, Russia, Khabarovsk Terr., Bikib Distr., 9 km SSE Boitsovo (FMNH).

DESCRIPTION:

Size, body proportions, microsculpture, punctation, arrangement of setae as in *H. schwarzi*. Head, pronotum, antennae, maxillary palpi and abdomen, except for the

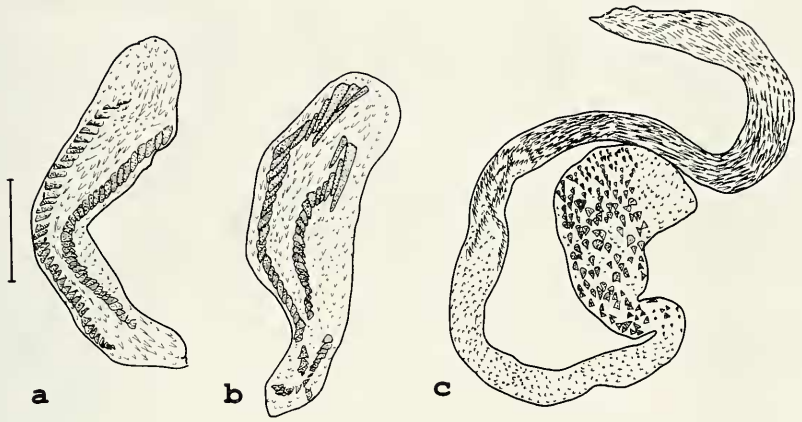

FIG. 18

The Habrocerus schwarzi-group: Internal sacs of *H. schwarzi* (a), *H. tichomirovae* (b) and *H. tropicus* (c). Scale: 0.25 mm.

hind margins of the tergites, brown to blackish brown; elytra light brown; legs yellowish brown.

♂: tergite VII almost straight posteriorly, sternite VII with sinuate sides and slightly rounded hind margin (Figs 16c-d); sclerites of urite VIII as in Figs 16a-b (appendices missing in holotype); internal sac with two rows of weakly sclerotized structures, most of which are of roughly triangular shape, whereas the apical ones are distinctly elongate (Fig. 18b).

♀: tergite VIII with angular, sternite VIII with variable, very weak to angular emargination posteriorly (Figs 16e-f).

Remarks: Since part of the genital armature of the only available ♂ (holotype) was missing, a description of the appendices and the number and shape of the setae, an important diagnostic character in the *H. schwarzi* species group, is not possible at present. However, as differences in the contents of internal sac as well as in the shapes of the ♀ tergite and sternite VIII can be observed, we think it best to treat *H. tichomirovae* as a valid species distinct from *H. schwarzi*, until further material of the former is available.

DISTRIBUTION:

H. tichomirovae is only known from Primorskiy kray, and Khabarobskiy kray, Russian Far East.

BIONOMICS:

The holotype and the paratypes were found under hay and straw, respectively. The ♀ from Khabarovsk Terr. was collected from "dead wood and litter in basal tree hole of small tree on hilltop".

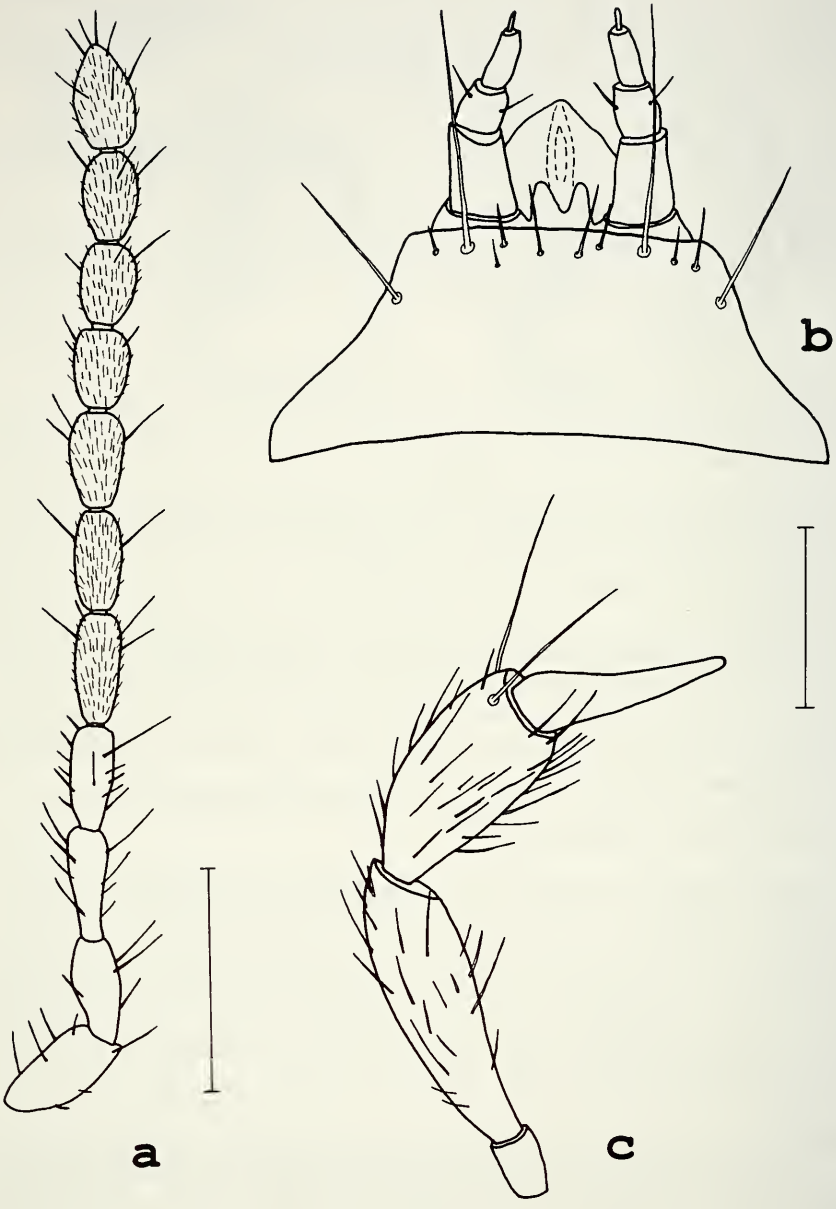

FIG. 19

Nomimocerus longispinosus spec. nov.: antenna (a); labium (b); maxillary palpus (c). Scale: 0.25 (a); 0.1 mm (b-c).

Habrocerus schillhammeri spec. nov. Fig. 17

HOLOTYPE: ♂, N-Sumatra, 18.II., D. Toba s-Prapat, Lumbah Julu, Indonesia 1990, leg. Schillhammer (NHMW).

DESCRIPTION:

Length of holotype: 2.0 mm. Easily distinguished from all other known species of *Habrocerus* by size alone. Colour of head black; pronotum pitchy brown; elytra only in part slightly lighter; antennae brown, legs light brown; abdomen dark brown with hind margins of tergites and tergite VII lighter in colour.

Head, pronotum and elytra with fine transverse microsculpture; pronotal, elytral and abdominal setae relatively long and stout, their insertions as in *H. schwarzi*. Elytral suture slightly (0.9x) shorter than pronotum.

Hind tibiae relatively longer than in *H. schwarzi*.

Abdomen with pubescence less dense, but longer than in *H. schwarzi*.

♂: tergite VII with almost parallel sides and with straight hind margin (Fig. 17d), the corresponding sternite broadly rounded posteriorly (Fig. 17c); sclerites of urite VIII asymmetrical; appendices of pleurites VIII with 3 (?) setae (Fig. 17a); shape of sternite VIII similar to that in *H. schwarzi* (Fig. 17b).

Remarks: Since relevant parts of the internal sac were damaged, it was not possible to illustrate its contents.

DISTRIBUTION:

So far only known from the type locality in Sumatra.

BIONOMICS: Unknown.

Habrocerus magnus Leconte, non *Habrocerus*

Habrocerus magnus Leconte, 1878, Proc. Amer. Philos. Soc. 57: 598.

An examination of the type (♂: USA, Isle Royal, 14.7LS, 29, Type 6510, H. magnus, J.L. LeConte Collection) in MCZ and further specimens (1 in MCZ and 5 in FMNH) revealed that this species neither belongs to the genus *Habrocerus* nor the subfamily Habrocerinae, but apparently to some tachyporine genus unknown to us. It lacks several characteristics of *Habrocerus* and Habrocerinae, respectively, the chief amongst them being the filiform antennae, the absence of an aedeagus and the typical abdominal modifications in the males. LECONTE himself seems to have been uncertain as to the generic identity of this species, which can be concluded from the question mark in his description.

H. magnus is here excluded from the genus *Habrocerus*.

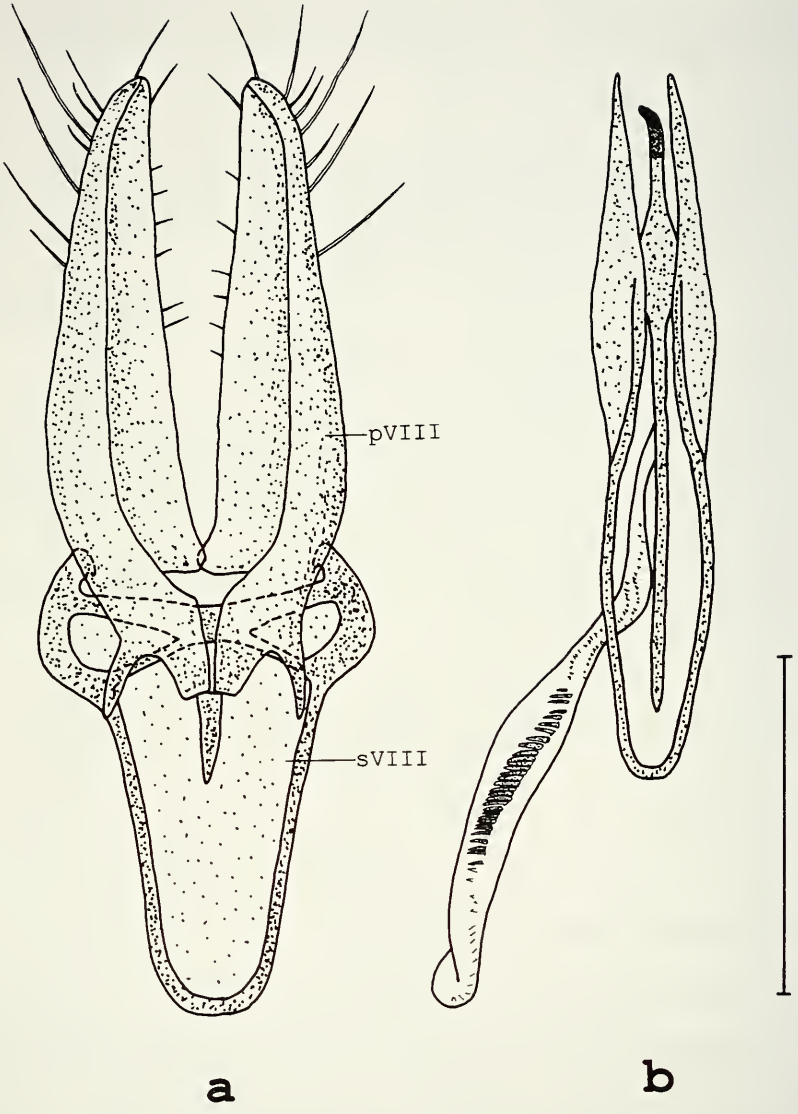

FIG. 20

Nomimocerus longispinosus spec. nov.: ♂ urite VIII in dorsal view (a); ♂ urite IX and internal sac (b); pVIII = pleurite VIII, sVIII = sternite VIII. Scale: 0.5 mm.

The genus **Nomimocerus** Coiffait & Saiz, 1965

Coiffait & Saiz (1965) based their description of *Nomimocerus* on the type species *N. marginicollis* (Solier) from Chile, originally described as *Tachyporus marginicollis*. Since then only one further *Nomimocerus* has been described, *N. tichomirovae* Filatova, which, however, is here transferred to *Habrocerus* (see above).

Morphology

Nomimocerus is identified as a habrocerine genus on the basis of the following characters: the absence of an aedeagus, the modifications of the last abdominal segments in the males (see below) and the flat triangular shape of the hind coxae. In addition, it very much resembles *Habrocerus* in general appearance, body size, sculpture and colour. Unlike *Habrocerus*, however, *Nomimocerus* possesses non-filiform antennae (Fig. 19a) and 4-segmented labial palps (Fig. 19b). Furthermore, the shape of the modified male urites, particularly the appendices of pleurites VIII, a character also visible in dried specimens, is clearly different (Fig. 20).

In *Nomimocerus* males tergite VII carries a membranous appendage posteriorly. The hind margin of sternite VII is concave or emarginate. The species differ with regard to this character, which is, however, subject to some intraspecific variability and thus not very reliable. The male genital armature is characterized by two somewhat massive pleurites VIII, which together are of scoop-like appearance, dorsally connected and ventrally linked to sternite VIII. The latter is U-shaped anteriorly and forms a wide X posteriorly (Fig. 20a). Segment IX, too, is highly modified and principally of similar construction as in *Habrocerus*. It consists of two anteriorly connected lateral lobes and a rode-like structure in the centre, the latter apically bent like a hook (Fig. 20b). The internal sac, which contains rows of spines of specific shapes and sizes, represents the most important and reliable differential character for the identification of the species of *Nomimocerus*.

In the females the hind margins of tergite and sternite VIII are rounded (Fig. 21b, c). As in *Habrocerus*, urite IX carries two stylus-shaped processes, the tips of which are visible in normal position (Fig. 21a).

Further morphological details are presented by Coiffait & Saiz (1965). It should be noted, however, that their illustrations contain several errors: Figs 2a-c depict the male urite VIII (not the aedeagus, as indicated in the legend), Fig. 2e shows the tergite VIII of a female *Habrocerus* [!] (not the fifth sternite of a male *Nomimocerus*) and Fig. 2f represents the female urite IX of *Habrocerus* [!] (not the male genital segment of *Nomimocerus*).

The species of **Nomimocerus**

An examination of the *Nomimocerus* material of several museum collections including the lectotype of *N. marginicollis* showed that at present 4 species can be

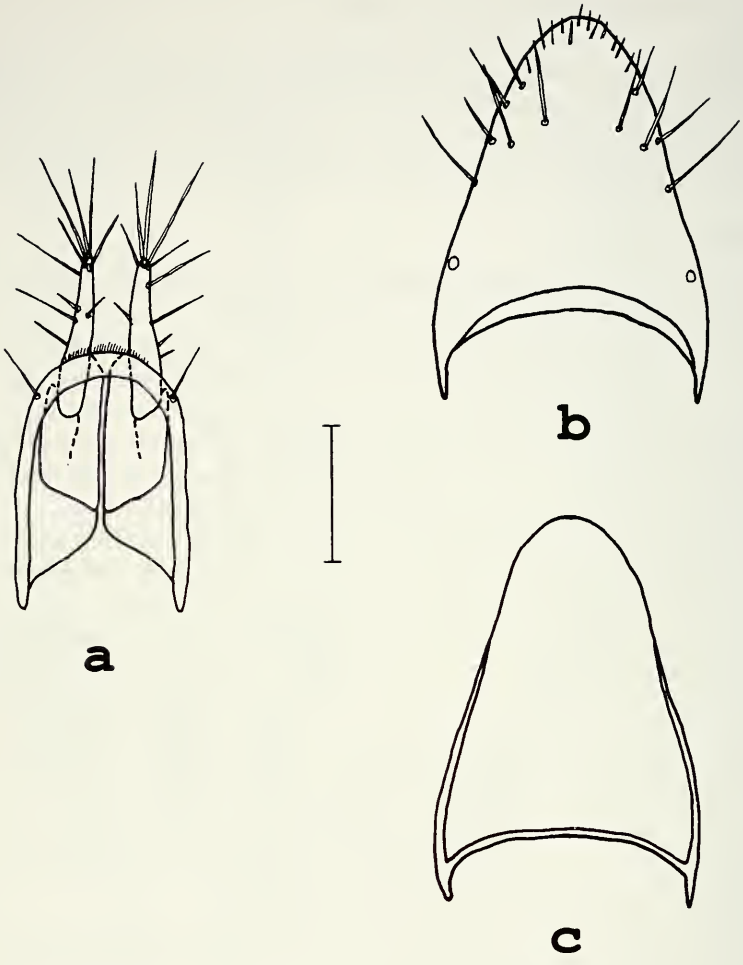

FIG. 21

Nomimocerus longispinosus spec. nov.: ♀ urite IX (a); ♀ tergite VIII (b): ♀ sternite VIII (c); setae and punctures omitted in c. Scale: 0.25 mm.

distinguished: *N. marginicollis*, *N. longispinosus* sp. n., *N. peckorum* sp. n. and *N. parvispinosus* sp. n. Since material of *Nomimocerus* appears to be rather scarce in the major collections and since three of the species are presently known only from one locality each, further species are very likely to be discovered in the future. The distribution of *Nomimocerus* seems to be restricted to the south of South America. The only species described from a different region (*N. tichomirovae*) turned out to be a *Habrocerus*.

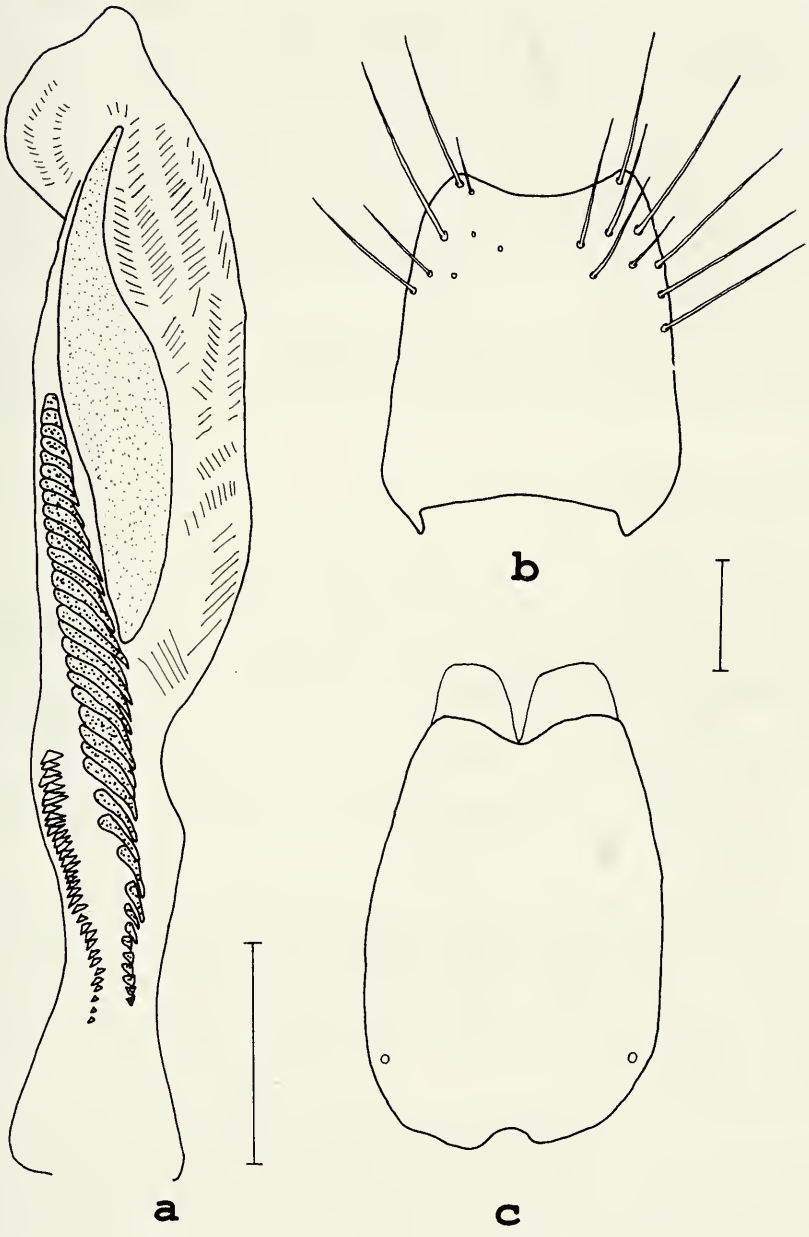

FIG. 22

Nomimocerus marginicollis (Solier) ♂: internal sac (a); sternite VII (b); tergite VII (c); setae and punctures omitted in c. Scale: 0.25 mm.

Regarding their external morphology the species of *Nomimocerus* are highly similar. Apart from the somewhat variable shape of the hind margin of the male sternite VIII, no consistent differences were found, although a variety of characters and measurements were considered. Surprisingly, the same even applies to the complex structure of the male genital armature. The arrangement, size and shape of spines and further sclerotized structures in the internal sac were found to be the only safe and reliable differential characters, a situation similar to that in other staphylinid taxa (e.g. Xantholininae, Aleocharinae, etc.). In order to evaluate the internal sac properly it is necessary to squeeze it lightly and to examine it under the microscope at magnifications of 200-400x.

Since the four species treated below are highly similar regarding their external morphology we consider it sufficient to describe only *N. marginicollis* in full detail The descriptions of the following species will then focus on differential characters.

Nomimocerus marginicollis (Solier, 1849) Fig. 22

Tachyporus marginicollis Solier, 1849, in: Gay, *Hist. Chile* 4: 343.
Tachyporus marginicollis var. *rufescens* Solier, 1849, *in*: Gay, *Hist. Chile* 4: 343.
Habrocerus marginicollis; Kraatz, 1859, *Berl. Ent. Zeit.* 3: 10, 13.
Habrocerus marginicollis; Fairmaire & Germain, 1861, *Annal. Soc. entomol.* Fr. 1: 425.
Habrocerus marginicollis; Fauvel, 1864, *Annal. Soc. entomol.* Fr. 4: 124.
Habrocerus marginicollis; Fauvel, 1866, *Bull. Soc. Sinn. Norm.* 10: 331f.
Nomimocerus marginicollis; Coiffait & Saiz, 1965, *Bull. Soc. Hist. Nat. Toulouse* 100: 218 ff. figs.

Lectotype: ♀; labels: Puerto Montt, Chili, marginicollis Sol., Habrocerus, coll. et det. A. Fauvel (IRSNB; Nr. 17479).

Further material studied: 1 ♂, same data as lectotype and labelled 'Ex-Typis' (IRSNB).

Description:

3.5-4.0 mm. Measurements of pronotum and elytra of lectotype: length (PL) and width (PW) of pronotum 0.71 mm and 1.07 mm, respectively; length of elytral suture (EL) 0.83 mm. Head, pronotum, elytra and legs light to dark brown; abdomen dark brown to blackish brown with the hind margins of the tergites somewhat lighter; antennae yellow to yellowish brown, basal segments a little lighter in colour than apical half of antenna.

Head with large eyes reaching hind margin, surface somewhat shining despite clear transverse microsculpture. Antenna with first segment longer and wider than segment 2; segments 3-10 gradually decreasing in length and increasing in width, the distinctly elongate segments 3-6 ca. 3x and the suboval segments 9-10 ca. 1.5 x longer than wide; segments 5-11 with inconspicuous but very dense pubescence (cf. Fig. 19a).

Pronotum ca. 1.5x wider than long (see measurements) with arcuate sides and rounded anterior and posterior angles; its surface somewhat shining, but with distinct transverse microsculpture; altogether with 12 long setae: 4 equally spaced setae near

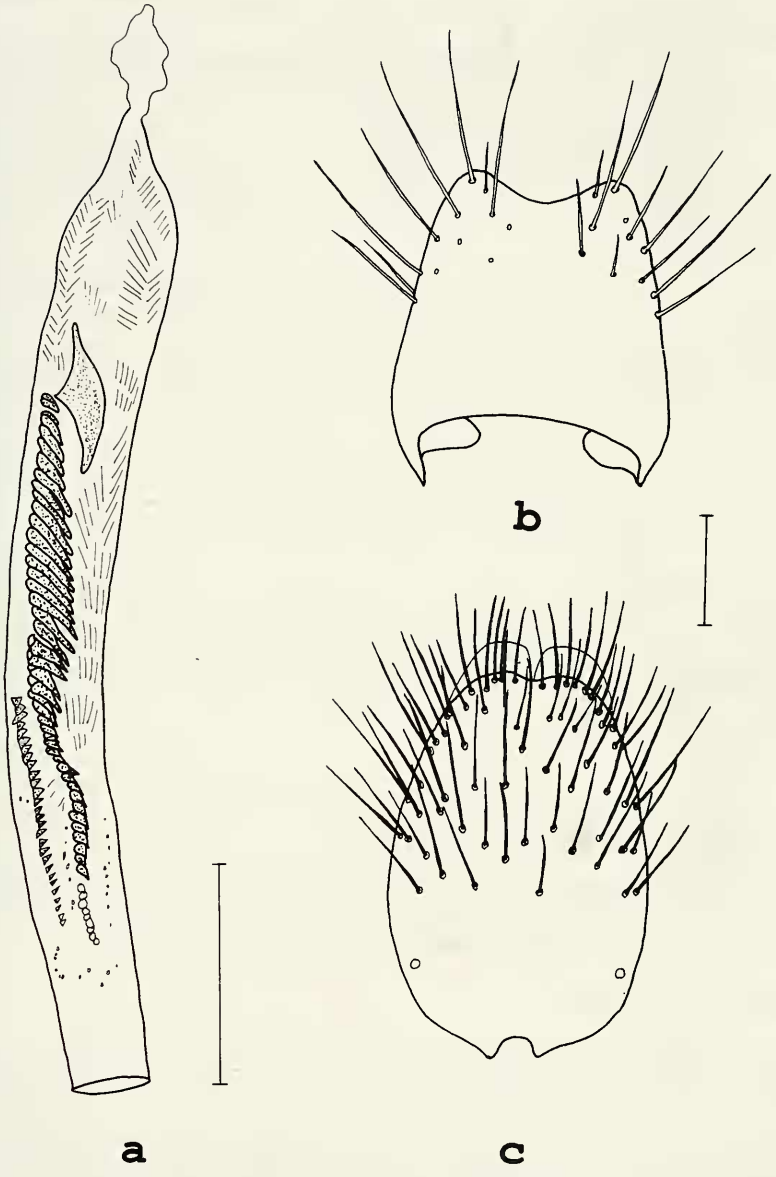

FIG. 23

Nomimocerus longispinosus spec. nov. ♂: internal sac (a); sternite VII (b); tergite VII (c). Scale: 0.25 mm.

front margin, 2 in the front corners, 2 central and 2 posterior setae near lateral margin and 2 at basal margin.

Elytra, along suture, slightly longer than pronotum; microsculpture similar to that of pronotum; each with one humeral and two lateral punctures bearing long setae and with one short bristle near the sutural angle.

Legs moderately long; front coxae approximately as long and as wide as front femora, the latter distinctly wider than mid- and hind femora; hind tarsi reaching 2/3 of length of hind tibiae, the first tarsal segment distinctly elongate, almost as long as segments 2-4 together.

Abdomen with surface of tergites mostly smooth between punctures, but subdued shine due to dense pubescence; hind margins of tergites with variable number of long setae: tergite III: 4-6, IV: 10-12, V: 12-14, VI: 10-14.

♂: hind margin of tergite VII slightly emarginate with membranous appendage split in the middle; sternite VII with hind margin broadly concave (Figs 22 b-c).

Scoop-like lobes of urite VIII larger than in the following species (cf. Fig. 20a). Internal sac with a large sclerotized piece, a row of about 30 relatively slender and long spines and a further row of minute spines (Fig. 22a).

♀: tergite and sternite VIII rounded apically (cf. Fig. 21a-c).

Remarks: FAUVEL (1864; 1866) and KRAATZ (1859) state that the type of *Nomimocerus rufescens* (Solier) is an immature specimen of *N. marginicollis*. Since half of the type is missing (KRAATZ 1859) and, consequently, it is impossible to confirm or disprove their opinion, we follow these authors and regard *N. rufescens* as a synonym of *N. marginicollis*.

DISTRIBUTION:

According to COIFFAIT & SAIZ (1965) the species is known from the province of Valdivia, from Chiloe and Puerto Montt.

However, since *N. marginicollis* is the only species known before and since we have been unable to examine specimens from the first two locations, Puerto Montt must, at present, be considered the only safe record of the species.

BIONOMICS: Unknown.

Nomimocerus longispinosus spec. nov. Figs 19, 20, 21, 23

HOLOTYPES: ♂, labels: Chile: Aysen Prov., 34 km W Pto. Aysen, San Sebastian, 150 m, 24.I.1985, cliffbase, mixed forest bamboo litter, S. & J. Peck, berlese (FMNH).

PARATYPES: 28 ♂♂, 20 ♀♀: same data as holotype; 8 ♂♂, 9 ♀♀: Chile, Aysen Prov., 33 km E Pto. Aysen, Rio Simpson N.P., 70 m, 26.I.1985, forest sifted leaf and stick litter, S. & J. Peck (FMNH, Cass, Cwun).

DESCRIPTION:

3.5-4.0 mm. Measurements of pronotum and elytra: PL: 0.63-0.70 mm; PW: 0.9-1.05 mm; EL: 0.62-0.72 mm.

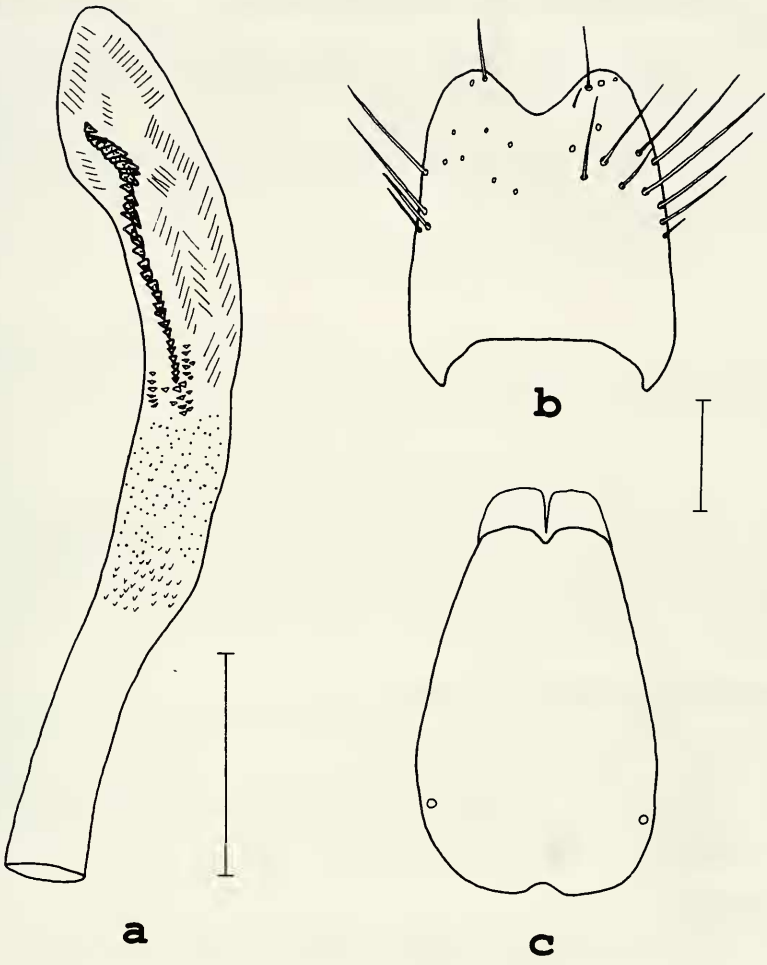

FIG. 24

Nomimocerus parvispinosus spec. nov. ♂: internal sac (a); sternite VII (b); tergote VII (c); setae and punctures omitted in c. Scale: 0.25 mm.

Colour variable; head, pronotum and elytra reddish brown to dark brown with the head often darker and the pronotum, especially the sides, usually lighter; abdomen blackish brown with the hind margins of the tergites lighter in colour; colour of appendages as in *N. marginicollis*.

In external morphology (proportions, microsculpture, punctures) highly similar to *N. marginicollis*; abdomen slightly less shining due to superficial microsculpture between punctures.

Hind wings reduced, only slightly longer than elytra, in all the specimens examined.

♂: tergite VII smaller than in *N. marginicollis*, its hind margin with weak concave emargination in the middle (Fig. 23c); emargination of posterior margin of sternite VII wide and usually deeper than in *N. marginicollis*, but not as deep as in the following species (Fig. 23b); internal sac with a rather small sclerotized piece visible in transparent light, a characteristic row of partly long spines (name!) and a short row of minute spines (Fig. 23a).

♀: last abdominal segments as in Figs 21a-c.

Distribution:

All the specimens studied were collected near Puerto Aysen (Aisen) in the south of Chile (ca. 45° southern latitude).

Bionomics:

The type material was extracted or sifted from leaf and stick litter and bamboo litter in mixed forests at lower elevations (70-150 m). A considerable proportion of the beetles collected in January was immature. All 66 specimens were brachypterous and thus incapable of flight.

Nomimocerus parvispinosus spec. nov. Fig. 24

Holotype: ♂; labels: S. Arg. Rio Negro, El Bolson, Topal, Nr. 543, 8.IX.61, marginicollis Solier, ex coll. Scheerpeltz (NHMW).

Paratypes: 5 ♂♂, 5 ♀♀: same locality as holotype, dates of collection 14.VI.61 (4 ♂♂, 1 ♀), 6.XI.61 (1 ♂), 13.V.61 (1 ♀), 8.IX.61 (1 ♀), 22.IX.61 (2 ♀♀), 15.IX.61 (1 ♀); 1 ♂: Chile, Umg. Santiago, Sterc. Bovin., Kuschel (NHMW, Cass, Cwun).

Description:

3.5-4.0 mm. Measurements of pronotum and elytra: PL: 0.63-0.72 mm; PW: 0.9-1.1 mm; EL: 0.65-0.85 mm.

Colour of head, pronotum and elytra brown to dark brown with the head often darker and the sides of the pronotum usually yellowish brown; abdomen blackish brown with the hind margins of the tergites lighter in colour; colour of appendages as in *N. marginicollis*.

External morphology (proportions, microsculpture, punctures) highly similar to *N. marginicollis*; abdomen slightly less shining due to superficial microsculpture between punctures. Hind wing development dimorphic, elytra somewhat longer in macropterous specimens (distinctly longer than pronotum) than in those with reduced alae (about equal in length to pronotum).

♂: shape of tergite VII as in *N. marginicollis*, but smaller (Fig. 24c); emargination of hind margin of sternite VII usually relatively deep and roughly triangular (Fig. 24b), rarely shallow and almost concave; internal sac smaller than in *N.*

marginicollis, with one row of 30-40 small spines (name!) and without distinct sclerotized piece (Fig. 24a).

♀: last segments of abdomen as in *N. longispinosus*.

DISTRIBUTION:

N. parvispinosus is only known from the type locality in Argentina and the surroundings of Santiago de Chile.

BIONOMICS: Unknown.

Nomimocerus peckorum spec. nov. Fig. 25

HOLOTYPE: ♂; labels: Chile, Osorno Prov., Puyehue N.P. Anticura, Repucura Tr., 500 m, 6.II.1985, forest litter, S. & J. Peck, berlese (FMNH).

PARATYPES: 2 ♀♀: same data as holotype; 1 ♀: Chile: Osorno Prov., Puyehue Nat. Pd., Antillarca Rd., 500-1000 m, 18;-20.XII.1984, S. & J. Peck, carnetting; 1 ♂: Chile: Osorno Prov., Puyehue Nat. Pk., Antillanca Rd., 470 m, 20.-24.XII.1982, Valdivian rainforest, leaf & log litter, A. Newton & M. Thayer; 1 ♀: Chile: Osorno Prov., Puyehue Nat. Pk., Antillanca Rd., 690 m, 20.-24.XII.1982, Valdivian rainforest, leaf & log litter, A. Newton & M. Thayer; 1 ♂: Chile, Osorno Prov., Puyehue Nat. Pk., Antillanca Rd., 845 m, leaf & log litter, 18.-24.XII.1982, A. Newton & M. Thayer; 1 ♂, 1 ♀: Chile, Llanquihue Prov., Salto Petrohue, V. Perez Nat. Pk., 150 m, 23.XII.1984, mixed forest litter, S. & J. Peck (FMNH, Cass, Cwun).

DESCRIPTION:

3.5-4.0 mm. Measurements of pronotum and elytra: PL: 0.63-0.70 mm; PW: 0.9-1.1 mm; EL: 0.61-0.73 mm.

Colour variable; head, pronotum and elytra reddish brown to dark brown with the head often darker and the sides of the pronotum lighter; abdomen blackish brown with the hind margins of the tergites lighter in colour; colour of appendages as in *N. marginicollis*.

In external morphology (proportions, microsculpture, punctures) highly similar to the other species; shine and microsculpture of abdomen as in *N. longispinosus* and *N. parvispinosus*.

Hind wings reduced, only slightly longer than elytra, in all the specimens included in the type series.

♂: tergite VII smaller than in *N. marginicollis*, its shape as in *N. longispinosus* (Fig. 25c); emargination of posterior margin of sternite VII triangular, deeper than in the other species (Fig. 25b); internal sac with a large sclerotized piece and a series of spines, part of which are characteristically shaped with a bulbous base and a slender apical process (Fig. 25a).

♀: last abdominal segments as in *N. longispinosus*.

DISTRIBUTION:

Presently the species is only known from the type locality and its surroundings south of Valdivia, Chile.

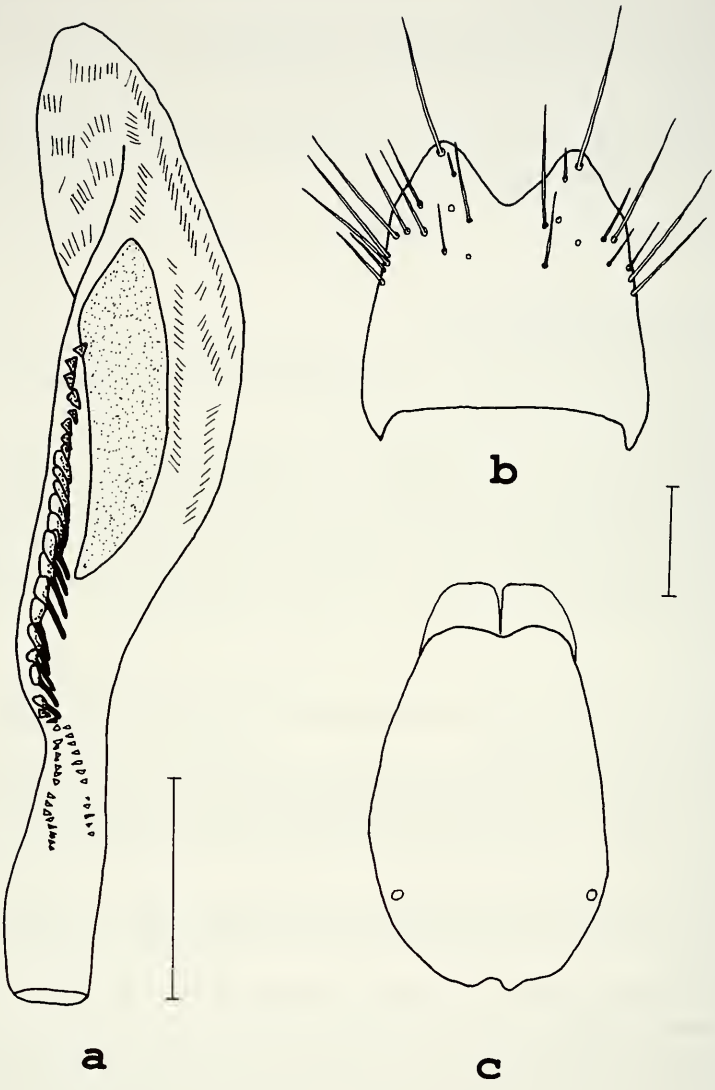

FIG. 25

Nomimocerus peckorum spec. nov. ♂: internal sac (a); sternite VII (b); tergite VII (c); setae and punctures omitted in c. Scale: 0.25 mm.

BIONOMICS:

The species was collected from leaf and log litter in Valdivian rainforest and in mixed forest at various elevations (150-850 m) in December. According to the labels some adult beetles were found together with larvae. All the specimens included in the type series were brachypterous and thus incabable of flight. However, on one of the locations indicated above a macropterous *Nomimocerus* ♀ was collected, which might belong to the same species, but was considerably larger and darker and had distinctly longer elytra.

KEY TO GENERA OF HABROCERINAE

1. Antenna filiform with segments 3-11 distinctly narrower than first two segments (Fig. 1a); labial palps 3-segmented.
♂: tergite VII with inconspicuous complete membranous appendage posteriorly, hind margin of sternite VII rounded, straight or, at the most, very shallowly concave, urite VIII with long spine-shaped appendices crossed in normal position (Fig. 2).
♀: hind margins of tergite and sternite VIII rounded, pointed or emarginate ..... *Habrocerus* Erichson
– Antennal segments 3-11 subequal in width to first two segments or only slightly narrower; labial palps 4-segmented.
♂: tergite VII with conspicuous, deeply incised membranous appendage posteriorly, hind margin of sternite VII with broadly concave or triangular emargination, urite VIII with large appendices together forming scoop-like structure (usually visible at least in part in mounted specimens) (Fig. 20a).
♀: posterior margins of tergite and sternite VIII rounded (Figs 21a-c)
..... *Nomimocerus* Coiffait & Saiz

KEY TO SPECIES OF HABROCERUS

1. On average larger in size (3.0-4.5 mm); anterior lateral seta of pronotum clearly distant from anterior pronotal margin; pronotum with or without microsculpture.
♂: genital sclerites almost symmetrical; anterior margin of sternite VIII rounded, its posterior margin with emargination of various shapes (cf. Fig. 4b); appendices of pleurites VIII with at the most 2 long setae.
♀: posterior margins of tergite VIII bluntly to acutely pointed (cf. Figs 4g, 10g).
West Palaearctic, Oriental region 2
– On average smaller in size (2.0-3.0 mm); anterior lateral seta of pronotum very close to anterior pronotal margin; microsculpture on pronotum always clearly visible.

♂: genital sclerites asymmetrical; anterior margin of sternite VIII almost straight and laterally with tooth-like processes, its posterior margin without central emargination (cf. Fig. 13b); appendices of pleurites VIII with 3 or more long setae.
♀: posterior margin of tergite VIII more or less emarginate. New World[1], East Palaearctic, Indo-Malayan region.
The ***Habrocerus schwarzi*** **species group** 9

2. Pubescence of abdomen dense, fine microsculpture on tergites sometimes weak, but always visible.
♂: urite VIII with seta near spiraculum (as in Fig. 4a); posterior part of sternite VIII with apices of lateral processes of more complex construction, small tooth-like processes at the sides of central emargination of hind margin almost always present (Fig. 4b); internal sac often with large dark spines (Figs 12a-d).
♀: Posterior margins of tergite and sternite VIII acutely pointed (as in Figs 4g-h).
West Palaearctic.
The ***Habrocerus capillaricornis*** **species group** 3

– Abdomen very shining, without microsculpture and with less dense pubescence.
♂: urite VIII without seta near spiraculum (Figs 9a, 10a); apices of latero-posterior processes of sternite VIII simple, central emargination of hind margin without tooth-like processes (Figs 9b, 10b); internal sac without large dark spines (Figs 11g-h).
♀: Posterior margins of tergite and sternite VIII rounded or bluntly pointed (Figs 9g-h, 10g-h).
Oriental region.
The ***Habrocerus rougemonti*** **species group** 8

3. Disc of pronotum usually without transverse microsculpture, which may, however, be present on the sides and near the hind margin.
♂: appendices of pleurites VIII with two long setae (as in Fig. 3a).
♀: posterior margin of sternite VII weakly concave (cf. Fig. 3f) 4

– Transversely striate microsculpture on disc of pronotum usually clearly visible.
♂: appendices of pleurites VIII with 1 long seta (cf. Fig. 4a).
♀: sternite VII straight or rounded posteriorly.
Species that can be identified with certainty only in the male sex 6

4. Colour of pronotum and elytra usually uniformly light to dark brown; shape of body more elongate, smaller (3.0-4.0 mm).

[1] Note that *H. capillaricornis* has become indigenous in North America only in this century and that it is here considered a West Palaearctic species.

♂: appendices of pleurite VIII weakly bent (Figs 3a, 6a); central emargination of posterior margin of sternite VIII with distinct tooth-like processes (Figs 3b, 6b).
♀: tergite VIII extremely pointed posteriorly (Figs 3g, 6g 5

– Body usually bicoloured with the pronotum darker than the elytra; body of broader shape and larger size (3.5-4.5 mm).
♂: appendices of pleurite VIII distinctly curved (Fig. 8a); central emargination of posterior margin of sternite VIII without processes (Fig. 8b); internal sac with a row of large dark, extremely wide-based spines and a number of additional dark spines of various shapes (Fig. 11b).
♀: tergite VIII simply pointed posteriorly (Fig. 8g).
Endemic to Canary Islands. . . . . *H. canariensis* sp. n.

5. ♂: central emargination of posterior margin of sternite VIII narrower with tooth-like processes subparallel (Fig. 3b); internal sac with a row of 6 large and dark, wide-based spines and ca. 8 additional small sclerotized structures of roughly triangular shape (Fig. 11a).
♀: tergite and sternite VIII less transverse, the latter with hind margin simply angled (Figs 3g-h).
West Palaearctic, introduced in North and South America.
. . . . . *H. capillaricornis* (Grav.)

– ♂: central emargination of hind margin of sternite VIII broader with tooth-like processes slightly converging posteriorly (Fig. 6b); internal sac without large dark spines (Fig. 11f).
♀: tergite and sternite VIII more transverse, the latter with hind margin pointed in the middle (Fig. 6g-h). Endemic to Cyprus. . . . . *H. cyprensis* sp. n.

6. ♂: internal sac larger, containing a number of dark spines (Figs 11c, d). 7

– ♂: internal sac small, without dark spines (Fig. 11e).
Southwest Europe. . . . . *H. ibericus* sp. n.

7. ♂: central emargination of posterior margin of sternite VIII with short and blunt, but distinct tooth-like processes (Fig. 4b); internal sac larger, with a row of ca. 11 large dark spines of elongate, roughly triangular shape (Fig. 11c).
Balkan, Northeast Mediterranean, Southern Italy. . . . . *H. pisidicus* Korge

– ♂: central emargination of posterior margin of sternite VIII with very indistinct processes (Fig. 5b); internal sac smaller, containing 5-6 large dark elongate spines (Fig. 11d). East Mediterranean from East Anatolia to Israel. . . . . *H. simulans* sp. n.

8. ♂: hind margin of sternite VIII deeply and broadly emarginate, U-shaped (Fig. 9b). Sclerites of urite IX apically rounded in lateral view (Fig. 9i); internal sac containing a central row of ca. 30 weakly sclerotized, triangular structures (Fig. 11g).
Thailand. . . . . *H. rougemonti* Pace

– ♂: hind margin of sternite VIII narrower and V-shaped (Fig. 10b); pleurites VIII of different shape (10a); sclerites of urite IX apically

pointed in lateral view (Fig. 10i); internal sac containing a central row of ca. 80 weakly sclerotized, triangular structures (Fig. 11g).
India (Darjeeling). . . . . *H. indicus* sp. n.

9. Larger species, 2.5-3.0 mm; tergites with rather dense pubescence.
New World, East Palaearctic. 10

– Very small species, 2 mm; tergites with less dense pubescence; pronotal and elytral setae rather long and stout.
♂: tergite VII with almost parallel sides and roughly straight hind margin (Fig. 17d); sclerites of urite VIII as in Figs 17a-b.
Sumatra. . . . . *H. schillhammeri* sp. n.

10. Colour of body lighter on average, brown to dark brown with the elytra often yellowish to reddish brown.
♂: appendices of pleurite VIII with 6-7 setae (number of setae in *H. tichomirovae* unknown!) (Fig. 13a).
North America, East Palaearctic. 11

– Body colour darker on average, dark brown to blackish brown with the elytra often somewhat lighter.
♂: appendices of pleurite VIII with less than 6 setae (Figs. 14a, 15a).
Central and South America. 12

11. ♂: internal sac with two rows of weakly sclerotized triangular structures of roughly the same size (Fig. 18a); tergite and sternite VII as in Figs 13c-d; appendices of pleurites VIII with 6-7 setae (Fig. 13a); sternite VIII and sclerites of urite IX as in Figs 13b, g.
♀: tergite VIII with deep rounded emargination posteriorly (Fig. 13f); sternite VIII as in Fig. 13e.
North America. . . . . *H. schwarzi* Horn

– ♂: internal sac with two tows of weakly sclerotized structures strongly increasing in size and length apically (Fig. 18b); number of setae on appendices of pleurites VIII unknown.
♀: hind margin of tergite VIII with angular emargination (Fig. 16f); sternite VIII as in Fig. 16e.
Russian Far East. . . . . *H. tichomirovae* (Filatova)

12. ♂: appendices of pleurites VIII with 5 setae (Fig. 14a); internal sac very long (Fig. 18c).
♀: tergite VIII with deep, U-shaped incision posteriorly (Fig. 14f).
South America. . . . . *H. tropicus* Wendeler

– ♂: appendices of pleurite VIII with 4 setae (Fig. 15a).
♀: tergite VIII with very small incision posteriorly (Fig. 15f).
Costa Rica. . . . . *H. costaricensis* sp. n.

Key to species of Nomimocerus

1. ♂: internal sac without distinct sclerotized piece and with a relatively short row of minute spines (Fig. 24a); emargination of hind margin of sternite VII usually roughly triangular (Fig. 24b).

Argentina, Chile. ..... *N. parvispinosus* sp. n.

– ♂: internal sac with distinct sclerotized piece and a relatively long row of — at least partly — elongate spines, sometimes with an additional short row of minute spines; emargination of hind margin of sternite VII triangular to shallowly concave. 2

2. ♂: central spines in internal sac of characteristic shape, with bulbous bases and elongate apices (Fig. 25a); emargination of hind margin of sternite VII triangular (Fig. 25b).
Chile. ..... *N. peckorum* sp. n.

– ♂: spines in internal sac of different shapes; hind margin of sternite VII shallowly concave. 3

3. ♂: sclerites of urites VII-IX and internal sac larger than in the other species, concavity of hind margin of sternite VII very shallow (Fig. 22b); internal sac with long sclerotized piece (Fig. 22a).
Chile. ..... *N. marginicollis* (Solier)

– ♂: sclerites of urites VII-IX and internal sac smaller, concavity of hind margin of sternite VII deeper; sclerotized piece in internal sac short and of different shape (Fig. 23a).
Chile ..... *N. longispinosus* sp. n.

RÉSUMÉ: RÉVISION DES ESPECES DE LA SOUS-FAMILLE HABROCERINAE (COLEOPTERA: STAPHYLINIDAE) DU MONDE.

Actuellement la sous-famille Habrocerinae comprend deux genres, *Habrocerus* Erichson et *Nomimocerus* Coiffait & Saiz. Une révision à l'échelle mondiale du genre *Habrocerus* Erichson a révélé dans l'ensemble 13 espèces valides. 7 nouvelles espèces sont décrites: *H. ibericus* sp. n. du sud-ouest de l'Europe, *H. simulans* sp. n. de la région est de la Méditerranée, *H. cyprensis* sp. n. de Chypre, *H. canariensis* sp. n. des îles Canaries, *H. indicus* sp. n. d'Inde, *H. costaricensis* sp. n. de Costa Rica et *H. schillhammeri* sp. n. de Sumatra. *H. capillaricornis* ssp. pisidicus Korge est passé au rang d'espèce. Des Lectotypes sont désignés pour *Habrocerus capillaricornis* (Gravenhorst) et *H. schwarzi* Horn. *Nomimocerus tichomirovae* Filatova est transféré dans le genre *Habrocerus*. *H. magnus* Leconte d'Amérique du Nord est exclu du genre. 3 nouvelles espèces de *Nomimocerus* Coiffait & Saiz, dont on ne connaissait jusqu'à présent que l'espèce de type, *N. marginicollis* (Solier), sont décrites: *N. longispinosus* sp. n., *N. peckorum* sp. n., tous deux du Chili, et *N. parvispinosus* sp. n. d'Argentine et du Chili. La position systématique et les caractéristiques morphologiques, en particulier la structure de l'abdomen mâle, de *Habrocerus* et *Nomimocerus* sont présentées. Pour chaque espèce, des détails et des illustrations des caractères différentiels aussi bien que les dates de dispersion et, dans le cas où cela est possible, l'écologie sont présentés. Des clés permettent de déterminer les adultes d'*Habrocerus* et de *Nomimocerus*.

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